Guntermann & Drunck GmbH
www.gdsys.de

Target Modules and User Modules

EN

Installation and Operation

DP-HR-U Variants

About this manual

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G&D neither explicitly nor implicitly takes guarantee or responsibility for the quality, efficiency and marketability of the product when used for a certain purpose that differs from the scope of service covered by this manual.

For damages which directly or indirectly result from the use of this manual as well as for incidental damages or consequential damages, G&D is liable only in cases of intent or gross negligence.

Caveat Emptor

G&D will not provide warranty for devices that:

- Are not used as intended.
- Are repaired or modified by unauthorized personnel.
- Show severe external damages that was not reported on the receipt of goods.
- Have been damaged by non G&D accessories.

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Safety instructions

Please read the following safety instructions carefully before you start operating the G&D product. The instructions well help in avoiding damages to the product and in preventing possible injuries.

Keep this manual handy for all persons who will be using this product.

Follow all warnings or operating instructions which are on the device or stated in this user manual.

⚠ **Beware of electric shocks**

To avoid the risk of electric shock, do not open the device or remove the covers. If service is required, please contact our technicians.

⚠ **Disconnect the main power plug or the power supply before installation**

Before installation, ensure that the device has been disconnected from the power source. Disconnect the main power plug or the power supply of the device.

⚠ **Ensure constant access to the power plugs**

During the installation of the devices, ensure that the power plugs remain accessible.

⚠ **Do not cover the ventilation openings**

Ventilation openings prevent the device from overheating. Do not cover them.

⚠ **Avoid tripping hazards**

Avoid tripping hazards while laying cables.

⚠ **Only use a grounded voltage source**

Operate this device by using a grounded voltage source.

⚠ **Use only the provided G&D power pack**

Operate this device with the provided G&D power pack or with the power pack listed in the manual.

⚠ **Operate the device only in designated areas.**

The devices are designed for indoor use. Avoid exposure to extreme cold, heat or humidity.

Special instruction for dealing with laser technology

The **Fiber** devices of the target modules and user modules use components with laser technology which comply with laser class 1.

They meet the requirements according to **EN 60825-1:2007** and **EN 60825-2:2004+A1:2007** as well as **U.S. CFR 1040.10** and **1040.11**.

LASER CLASS 1
DIN EN 60825-1:2001-11
Invisible laser beam, avoid exposure with optical instruments
Complies with 21 CFR 1040.10 and 1040.11

Mind the following instructions when dealing with laser beams:

⚠ **Avoid eye contact with invisible laser beam**

Do *not* look directly into the beam using optical instruments.

⚠ **Always connect optical connections or cover them with protection caps**

When not in use, optical connections of the *Transmission* sockets as well as cable plugs must always be covered with a connector or a protection cap.

⚠ **Only use G&D certified transmission modules**

It is not allowed to use transmission modules that do not comply with laser class 1 according to **EN 60825-1:2007**. By applying such modules, the compliance of the given instructions and recommendations for laser safety cannot be guaranteed.

The guarantee of complying with all relevant instructions can only be given by applying original components. The devices must therefore only be operated G&D certified transmission modules.

A Target modules

Target module »DP-HR-U-CPU«

With **DP-HR-U-CPU** target modules, you can connect a computer with **DisplayPort** graphics output to a digital matrix switch of the *ControlCenter-Digital* or the *DVICenter* series.

Users at the consoles of the matrix switch can access the target module and operate the connected computer.

The data stream of the USB devices connected to the active user module (**DVI-U-CON**, **DP-U-CON** and **DP-HR-U-CON** series only) is transmitted to the computer with up to 16 Mbit/s.

Package contents

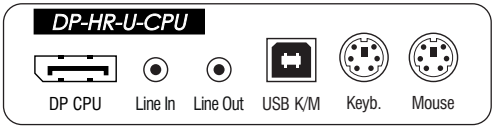
- 1 × Target module **DP-HR-U-CPU**
- 1 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 1 × Twin PS/2 cable
- 2 × Audio cable
- 1 × Power pack (12V/2A)
- 1 × Power cable

Required accessories

- 1 × Category 5e (or better) twisted pair cable to connect the target module to the matrix switch

Installation

Connecting the target computer



DP CPU: Use the supplied video cables to connect the computer's *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

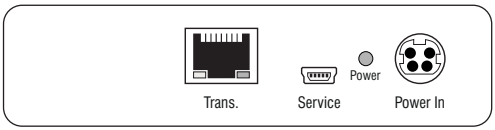
NOTE: Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of the Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of the Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connection to the matrix switch



Trans.: Use a category 5e (or better) twisted pair cable to connect this interface to a *Dynamic Port* (RJ45) of a matrix switch.

ADVICE: You can also connect the target module *directly* to a compatible user module.

Power supply

Power In: Insert the power pack's connection cable to this interface.
Connect the power cable to the power pack and a power socket.

Status displays

The Power LED on the back panel of the target module shows the status of the external power pack:

LED	Status	Meaning
Power	On	The external power pack is connected and the required voltage (12 Volt) is available.
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No user module accesses the target module.
		On	A user module accesses the target module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The target module is turned off.
		On	A user module accesses the target module.
		Blinking	The connection to the counterpart station could not be established.
		Flashing	The connection to the counterpart station is established. No user module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing user module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-U-CPU		
Interfaces to computer	Video:	1 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to the matrix switch	Interface:	1 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) › Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Power supply	Type:	Portable power pack (12 V/2 A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	Max. 600 mA
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	105 × 26 × 164 mm
	Weight:	Approx. 380 g
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

Target module »DP-HR-U-CPU-UC«

With **DP-HR-U-CPU-UC** target modules, you can connect a computer with **DisplayPort** graphics output to two *different* digital matrix switches of the *ControlCenter-Digital* or the *DVICenter* series.

At the consoles of both matrix switches, users can access a target module to operate the connected computer.

The data stream of the USB devices connected to the active user module (**DVI-U-CON**, **DP-U-CON** and **DP-HR-U-CON** series only) is transmitted to the computer with up to 16 Mbit/s.

Package contents

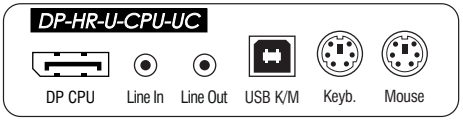
- 1 × **DP-HR-U-CPU-UC** target module
- 1 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 1 × Twin-PS/2 cable
- 2 × Audio cable
- 1 × Power pack (12V/24W)
- 1 × Power cable

Required accessories

- 2 × Category 5e (or better) patch cables to connect the target module to two *different* matrix switches

Installation

Connecting the target computer



DP CPU: Use the supplied video cables to connect the computer's *Display Port* video output to this interface.

Line In: Use an audio cable to connect the computer's *Line-Out* interface to this port.

Line Out: Use an audio cable to connect the computer's *Line-In* interface to this port.

NOTE: Both keyboard and mouse signals can be transmitted to the computer using the PS/2 *or* the USB ports.

USB K/M: Use the USB device cable to connect one of the computer's USB ports to this port.

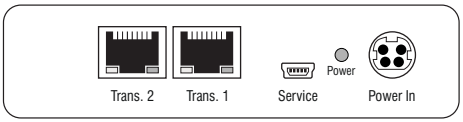
Keyb.: Use the purple plug of a Twin-PS/2 cable to connect the purple PS/2 socket (keyboard) to this port.

Mouse: Use the green plug of a Twin-PS/2 cable to connect the green PS/2 socket (mouse) of the computer to this port.

Connections to the matrix switches

IMPORTANT: Only connect one *Trans.* interface of the target module per matrix switch.

NOTE: Use category 5e twisted pair cables (or better) to connect the devices.



Trans. 1: Connect this interface to a *Dynamic Port* (RJ45) of a matrix switch.

Trans. 2: Connect this interface to a *Dynamic Port* (RJ45) of another matrix switch.

ADVICE: You can also connect the target module *directly* to up to two compatible user modules.

Power supply

Power In: Plug the power cable of the power pack in this interface. Then connect the power cable to the power pack and a power outlet.

Status displays

The Power LED on the back panel of the target module shows the status of the external power pack:

LED	Status	Meaning
Power	on	The external power pack is connected and the required voltage (12 Volt) is available.
	off	The external power pack is not (properly) connected.

The blinking Transmission LEDs signal the following operating statuses:

LED	Colour	Status	Meaning
Left	Yellow	Off	No user module accesses the target module.
		On	A user module accesses the target module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The target module is turned off.
		On	A user module accesses the target module.
		Blinking	The connection to the counterpart station could not be established.
		Flashing	The connection to the counterpart station is established. No user module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing user module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-U-CPU-UC		
Interfaces to computer:	Video:	1 × DisplayPort
	Keyboard and mouse signals:	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3.5 mm jack socket
Data transmission to matrix switches	Interface:	2 × RJ45 sockets
	Transmission length	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) › Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 bits
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Power supply	Type:	Power pack (12 V/2 A)
	Connection:	1 × Mini-DIN 4 socket
	Current consumption:	Max. 600 mA @ 12 VDC
Casing	Material:	Anodised aluminium
	Dimensions (W × H × D):	105 × 26 × 164 mm
	Weight:	Approx. 400 g
Operating environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

Target module »DP-HR-U-CPU-MC2«

With **DP-HR-U-CPU-MC2** target modules, you can connect a computer with **DisplayPort** graphics outputs (dual-head) to a digital matrix switch of the *ControlCenter-Digital* or the *DVICenter* series.

Users at the consoles of the matrix switch can access the target module and operate the connected computer.

The data stream of the USB devices connected to the active user module (**DVI-U-CON**, **DP-U-CON** and **DP-HR-U-CON** series only) is transmitted to the computer with up to 16 Mbit/s.

IMPORTANT: Only consoles configured for multi-monitor operation via channel grouping can show the images of both of the computer's video outputs on separate monitors.

At consoles with one monitor only, the image of the computer's second video output is not displayed.

Package contents

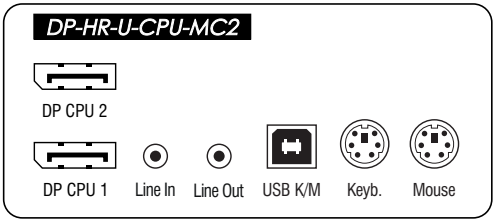
- 1 × Target module **DP-HR-U-CPU-MC2**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 1 × Twin-PS/2 cable
- 2 × Audio cable
- 1 × Power pack (12V/2A)
- 1 × Power cable

Required accessories

- 2 × Category 5e (or better) twisted pair cables to connect the target module to the matrix switch

Installation

Connecting the target computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

NOTE: Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

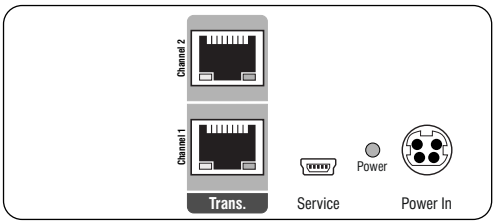
USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of the Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of the Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connection to the matrix switch

NOTE: Only use category 5e (or better) twisted pair cables to connect the devices.



Trans.|Channel 1: Connect this interface to a *Dynamic Port* (RJ45) of the matrix switch.

Trans.|Channel 2: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

NOTE: You can also connect the target *directly* to a compatible user module.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket.

The target module starts as soon as it is supplied with power. During start-up, the channels are automatically grouped (see below).

Automatic grouping of channels

When operating the target module for the first time, the matrix switch recognises the main channel and the target module's additional channel. The channels are automatically added to a *channel group*.

The web application uses the following icons to mark the different types of channels:

Main channel: target module icon with »MC« lettering
Video channel: target module icon with blue spot

NOTE: In addition to the data of the KVM main channel, a *channel group* transmits up to seven additional video channels and/or one USB 2.0 or RS 232 channel.

In the web application, the list of target modules provides separate entries for grouped channels. The ⊞ icon next to the module name shows that the module is part of a channel group.

Click the icon to get information about the channel group.

NOTE: You can adjust any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

The Power LED on the back panel of the target module shows the status of the external power pack:

LED	Status	Meaning
Power	on	The external power pack is connected and the required voltage (12 Volt) is available.
	off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No user module accesses the target module.
		On	A user module accesses the target module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The target module is turned off.
		On	A user module accesses the target module.
		Blinking	The connection to the counterpart station could not be established.
		Flashing	The connection to the counterpart station is established. No user module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing user module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-U-CPU-MC2		
Interfaces to computer	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to the matrix switch	Interface:	2 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) › Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Power supply	Type:	Portable power pack (12 V/2 A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	Max. 1.0 A
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	105 × 46 × 164 mm
	Weight:	Approx. 570 g
Operational environement	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

Target module »DP-HR-U-CPU-MC2-UC«

With **DP-HR-U-CPU-MC2** target modules, you can connect a computer with **DisplayPort** graphics outputs (dual-head) to two *different* digital matrix switches of the *Control-Center-Digital* or the *DVICenter* series.

At the consoles of both matrix switches, users can access a target module to operate the connected computer.

The data stream of the USB devices connected to the active user module (**DVI-U-CON**, **DP-U-CON** and **DP-HR-U-CON** series only) is transmitted to the computer with up to 16 Mbit/s.

IMPORTANT: Only consoles configured for multi-monitor operation via channel grouping can show the images of *both* of the computer's video outputs on separate monitors.

At consoles with one monitor only, the image of the computer's second video output is not displayed.

Package contents

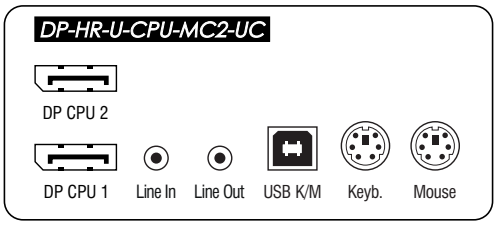
- 1 × Target module **DP-HR-U-CPU-MC2-UC**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 1 × Twin-PS/2 cable
- 2 × Audio cable
- 1 × Power pack (12V/2A)
- 1 × Power cable

Required accessories

- 4 × Category 5e (or better) twisted pair cables to connect the target module to two *different* matrix switches

Installation

Connecting the target computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

NOTE: Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

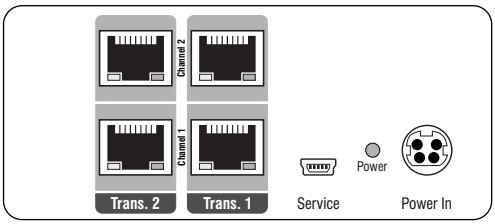
Keyb.: Use the purple plug of the Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of the Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connections to the matrix switches

IMPORTANT: Connect only one of the target module's *Trans.* interfaces for each matrix switch!

NOTE: Only use category 5e (or better) twisted pair cables to connect the devices.



Connecting the first matrix switch

Trans. 1|Channel 1: Connect this interface to a *Dynamic Port* (RJ45) of the first matrix switch.

Trans. 1|Channel 2: Connect this interface to another *Dynamic Port* (RJ45) of the first matrix switch.

Connecting the second matrix switch

Trans. 2|Channel 1: Connect this interface to a *Dynamic Port* (RJ45) of the second matrix switch.

Trans. 2|Channel 2: Connect this interface to another *Dynamic Port* (RJ45) of the second matrix switch.

ADVICE: You can also connect the target module *directly* to up to two compatible user modules.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket.

The target module starts as soon as it is supplied with power. During start-up, the channels are automatically grouped (see below).

Automatic grouping of channels

When operating the target module for the first time, the matrix switch recognises the main channel and the target module's additional channel. The channels are automatically added to a *channel group*.

The web application uses the following icons to mark the different types of channels:

- **Main channel:** target module icon with »**MC**« lettering
- **Video channel:** target module icon with blue spot

NOTE: In addition to the data of the KVM main channel, a *multichannel configuration* transmits up to seven additional video channels and/or one USB 2.0 or RS 232 channel.

In the web application, the list of target modules lists grouped modules separately. The ⊞ icon next to the module name shows that the module is part of a channel group.

Click the icon to get information about the channel group.

NOTE: You can adjust any manually or automatically created channel group. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

The Power LED on the front panel of the target module shows the status of the external power pack:

LED	Status	Meaning
Power	On	The external power pack is connected and the required voltage (12 Volt) is available.
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No user module accesses the target module.
		On	A user module accesses the target module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The target module is turned off.
		On	A user module accesses the target module.
		Blinking	The connection to the counterpart station could not be established.
		Flashing	The connection to the counterpart station is established. No user module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing user module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-U-CPU-MC2-UC		
Interfaces to computer	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Date transmission to matrix switches	Interface:	4 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) › Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Power supply	Type:	Portable power pack (12 V/2 A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	Max. 1.2 A
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	105 × 46 × 164 mm
	Weight:	Approx. 580 g
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

Target module »DP-HR-U-CPU-Fiber«

With **DP-HR-U-CPU-Fiber** target modules, you can connect a computer with **DisplayPort** graphics output to a digital matrix switch of the *ControlCenter-Digital* series.

NOTE: The target module con be connected only to an I/O card of the **CCD-I/O 16-Card-Fiber** series.

NOTE: Both, the target module and the I/O card are available as *single-mode* variants or as *multi-mode* variants. Make sure that the port at the user module, the *Dynamic-Port* at the IO card and the optical fibres are compatible with each other.

Users at the consoles of the matrix switch can access the target module and operate the connected computer.

The data stream of the USB devices connected to the active user module (**DVI-U-CON**, **DP-U-CON** and **DP-HR-U-CON** series only) is transmitted to the computer with up to 16 Mbit/s.

Package contents

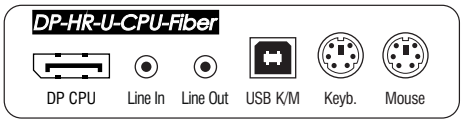
- 1 × Target module **DP-HR-U-CPU-Fiber**
- 1 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 1 × Twin-PS/2 cable
- 2 × Audio cable
- 1 × Power pack (12V/2A)
- 1 × Power cable

Required accessories

- 1 × Compatible optical fibre cable to connect the target module to the matrix switch

Installation

Connecting the target computer



DP CPU: Use the supplied video cables to connect the computer's *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

> **NOTE:** Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of the Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of the Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connection to the matrix switch

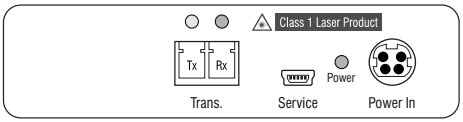
IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements according to **EN 60825-1:2007** and **EN 60825-2:2004+A1:2007** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid eye contact with invisible laser beam* on page 2
- *Always connect optical connections or cover them with protection caps* on page 2
- *Only use G&D certified transmission modules* on page 2

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.



Trans.|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Trans.|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

ADVICE: You can also connect the target module *directly* to a compatible user module.

Power supply

Power In: Connect the cable of the power pack to this interface. Now connect the power cable to the power pack and a power socket.

Status displays

The Power LED on the back panel of the target module shows the status of the external power pack:

LED	Status	Meaning
Power	On	The external power pack is connected and the required voltage (12 Volt) is available.
	Off	The external power pack is not (properly) connected.

The blinking LEDS on the back panel highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No user module accesses the target module.
		On	A user module accesses the target module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The target module is turned off.
		On	A user module accesses the target module.
		Blinking	The connection to the counterpart station could not be established.
		Flashing	The connection to the counterpart station is established. No user module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing user module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-U-CPU-FIBER		
Interfaces to computer	Video:	1 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to the matrix switch	Interface:	1 × LC-Duplex socket
	Transmission distance:	‣ DVI-CPU-Fiber(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DVI-CPU-Fiber(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DVI-CPU-Fiber(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	Max. 600 mA @ 12 VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	105 × 26 × 164 mm
	Weight:	Approx. 400 g

DP-HR-U-CPU-FIBER		
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

Target module »DP-HR-U-CPU-Fiber-UC«

With **DP-HR-U-CPU-Fiber-UC** target modules, you can connect a computer with **DisplayPort** graphics output to two *different* digital matrix switches of the *ControlCenter-Digital* series.

NOTE: The target module con be connected only to I/O cards of the **CCD-I/O 16-Card-Fiber** series.

NOTE: Both, the target module and the I/O cards are available as *single-mode* variants or as *multi-mode* variants. Make sure that the port at the user module, the *Dynamic-Port* at the IO card and the optical fibres are compatible with each other.

At the consoles of both matrix switches, users can access a target module to operate the connected computer.

The data stream of the USB devices connected to the active user module (**DVI-U-CON**, **DP-U-CON** and **DP-HR-U-CON** series only) is transmitted to the computer with up to 16 Mbit/s.

Package contents

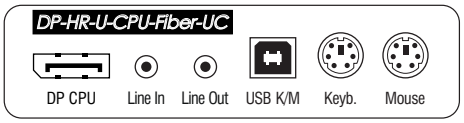
- 1 × Target module **DP-HR-U-CPU-Fiber-UC**
- 1 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 1 × Twin-PS/2 cable
- 2 × Audio cable
- 1 × Power pack (12V/2A)
- 1 × Power cable

Required accessories

- 2 × Compatible optical fibre cable to connect the target module to two matrix switches

Installation

Connecting the target computer



DP CPU: Use the supplied video cables to connect the computer's *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

NOTE: Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of the Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of the Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connection to the matrix switch

The devices use components with laser technology which comply with laser class 1.

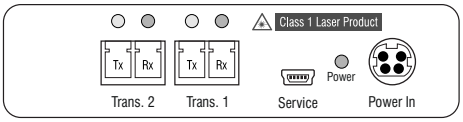
They meet the requirements according to **EN 60825-1:2007** and **EN 60825-2:2004+A1:2007** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid eye contact with invisible laser beam* on page 2
- *Always connect optical connections or cover them with protection caps* on page 2
- *Only use G&D certified transmission modules* on page 2

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

IMPORTANT: For each matrix switch, connect only one *Trans.* interface of the target module!



Trans. 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the first matrix switch.

Trans. 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the first matrix switch.

Trans. 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the second matrix switch.

Trans. 2|Rx : Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the second matrix switch.

ADVICE: You can also connect the target module *directly* to a compatible user module.

Power supply

Power In: Connect the cable of the power pack to this interface. Now connect the power cable to the power pack and a power socket.

Status displays

The Power LED on the back panel of the target module shwos the status of the external power pack:

LED	Status	Meaning
Power	On	The external power pack is connected and the required voltage (12 Volt) is available.
	Off	The external power pack is not (properly) connected.

The blinking LEDS on the back panel highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No user module accesses the target module.
		On	A user module accesses the target module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The target module is turned off.
		On	A user module accesses the target module.
		Blinking	The connection to the counterpart station could not be established.
		Flashing	The connection to the counterpart station is established. No user module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing user module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-U-CPU-FIBER-UC		
Interfaces to computer	Video:	1 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to matrix switches	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DVI-CPU-Fiber-UC(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DVI-CPU-Fiber-UC(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DVI-CPU-Fiber-UC(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	Max. 600 mA @ 12 VDC
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	105 × 26 × 164 mm
	Weight:	Approx. 420 g

DP-HR-U-CPU-FIBER-UC		
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

Target module »DP-HR-U-CPU-Fiber-MC2«

With **DP-HR-U-CPU-Fiber-MC2** target modules, you can connect a computer with **DisplayPort** graphics outputs (dual-head) to a digital matrix switch of the *ControlCenter-Digital* series.

NOTE: The target module con be connected only to I/O cards of the **CCD-I/O 16-Card-Fiber** series.

NOTE: Both, the target module and the I/O cards are available as *single-mode* variants or as *multi-mode* variants. Make sure that the port at the user module, the *Dynamic-Port* at the IO card and the optical fibres are compatible with each other.

Users at the consoles of the matrix switch can access the target module and operate the connected computer.

The data stream of the USB devices connected to the active user module (**DVI-U-CON**, **DP-U-CON** and **DP-HR-U-CON** series only) is transmitted to the computer with up to 16 Mbit/s.

IMPORTANT: Only consoles configured for multi-monitor operation via channel grouping can show the images of *both* of the computer's video outputs on separate monitors.

At consoles with one monitor only, the image of the computer's second video output is not displayed.

Package contents

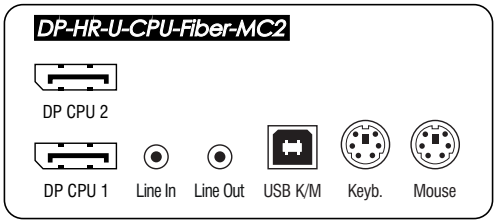
- 1 × Target module **DP-HR-U-CPU-Fiber-MC2**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 1 × Twin-PS/2 cable
- 2 × Audio cable
- 1 × Power pack (12V/2A)
- 1 × Power cable

Required accessories

- 2 × Compatible optical fibre cable to connect the target module to the matrix switch

Installation

Connecting the target computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

NOTE: Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of the Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of the Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connection to the matrix switch

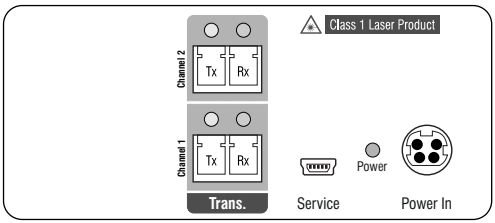
IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements according to **EN 60825-1:2007** and **EN 60825-2:2004+A1:2007** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid eye contact with invisible laser beam* on page 2
- *Always connect optical connections or cover them with protection caps* on page 2
- *Only use G&D certified transmission modules* on page 2

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.



Trans.|Channel 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Trans.|Channel 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Trans.|Channel 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the matrix switch.

Trans.|Channel 2|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

ADVICE: You can also connect the target module *directly* to a compatible user module.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket.

The target module starts as soon as it is supplied with power. During start-up, the channels are automatically grouped (see below).

Automatic grouping of channels

When operating the target module for the first time, the matrix switch recognises the main channel and the target module's additional channel. The channels are automatically added to a *channel group*.

The web application uses the following icons to mark the different types of channels:

Main channel: target module icon with »**MC**« lettering
Video channel: target module icon with blue spot

NOTE: In addition to the data of the KVM main channel, a *channel group* transmits up to seven additional video channels and/or one USB 2.0 or RS 232 channel.

In the web application, the list of target modules provides separate entries for grouped channels. The ⊞ icon next to the module name shows that the module is part of a channel group.

Click the icon to get information about the channel group.

NOTE: You can adjust any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

The Power LED on the back panel of the target module shows the status of the external power pack:

LED	Status	Meaning
Power	on	The external power pack is connected and the required voltage (12 Volt) is available.
	off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No user module accesses the target module.
		On	A user module accesses the target module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The target module is turned off.
		On	A user module accesses the target module.
		Blinking	The connection to the counterpart station could not be established.
		Flashing	The connection to the counterpart station is established. No user module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing user module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-U-CPU-FIBER-MC2		
Interfaces to computer	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Data transmission to the matrix switch	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DVI-CPU-Fiber-UC(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DVI-CPU-Fiber-UC(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DVI-CPU-Fiber-UC(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Power supply	Type:	Portable power pack (12V/2A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	Max. 1.1 A
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	105 × 46 × 164 mm
	Weight:	Approx. 600 g

DP-HR-U-CPU-FIBER-MC2		
Operational environement	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

Target module »DP-HR-U-CPU-Fiber-MC2-UC«

With **DP-HR-U-CPU-Fiber-MC2-UC** target modules, you can connect a computer with two **DisplayPort** graphics outputs (dual-head) to two *different* digital matrix switches of the *ControlCenter-Digital* series.

NOTE: The target module con be connected only to I/O cards of the **CCD-I/O 16-Card-Fiber** series.

NOTE: Both, the target module and the I/O cards are available as *single-mode* variants or as *multi-mode* variants. Make sure that the port at the user module, the *Dynamic-Port* at the IO card and the optical fibres are compatible with each other.

At the consoles of both matrix switches, users can access a target module to operate the connected computer.

The data stream of the USB devices connected to the active user module (**DVI-U-CON**, **DP-U-CON** and **DP-HR-U-CON** series only) is transmitted to the computer with up to 16 Mbit/s.

IMPORTANT: Only consoles configured for multi-monitor operation via channel grouping can show the images of *both* of the computer's video outputs on separate monitors.

At consoles with one monitor only, the image of the computer's second video output is not displayed.

Package contents

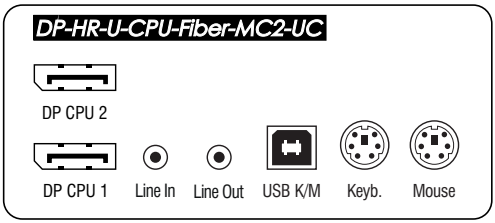
- 1 × Target module **DP-HR-CPU-U-Fiber-MC2-UC**
- 2 × DisplayPort video cable (*DP-Cable-M/M-2*)
- 1 × USB device cable
- 1 × Twin-PS/2 cable
- 2 × Audio cable
- 1 × Power pack (12V/2A)
- 1 × Power cable

Required accessories

- 4 × Compatible optical fibre cable to connect the target module to the matrix switch

Installation

Connecting the target computer



DP CPU 1: Use one of the supplied video cables to connect the computer's first *Display Port* video output to this interface.

DP CPU 2: Use one of the supplied video cables to connect the computer's second *Display Port* video output to this interface.

Line In: Use one of the supplied audio cables to connect the computer's *Line Out* interface to this interface.

Line Out: Use one of the supplied audio cables to connect the computer's *Line In* interface to this interface.

NOTE: Keyboard and mouse signals can be transmitted to the computer using *either* the PS/2 interfaces or the USB interface.

USB K/M: Use the USB device cable to connect one of the computer's USB interfaces to this interface.

Keyb.: Use the purple plug of the Twin-PS/2 cable to connect the computer's PS/2 keyboard interface to this interface.

Mouse: Use the green plug of the Twin-PS/2 cable to connect the computer's PS/2 mouse interface to this interface.

Connections to the matrix switches

The devices use components with laser technology which comply with laser class 1.

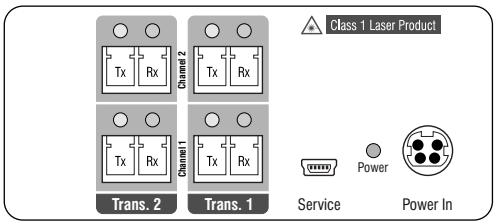
They meet the requirements according to **EN 60825-1:2007** and **EN 60825-2:2004+A1:2007** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid eye contact with invisible laser beam* on page 2
- *Always connect optical connections or cover them with protection caps* on page 2
- *Only use G&D certified transmission modules* on page 2

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

IMPORTANT: For each matrix switch, connect only one *Trans.* interface of the target module!



Connecting the first matrix switch

Trans. 1|Channel 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the first matrix switch.

Trans. 1|Channel 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the first matrix switch.

Trans. 1|Channel 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the first matrix switch.

Trans. 1|Channel 2|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the first matrix switch.

Connecting the second first matrix switch

Trans. 2|Channel 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the second matrix switch.

Trans. 2|Channel 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the second matrix switch.

Trans. 2|Channel 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the second matrix switch.

Trans. 2|Channel 2|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the second matrix switch.

ADVICE: You can also connect the target module *directly* to up to two compatible user modules.

Power supply

Power In: Insert the power pack's connection cable to this interface.

Start-up

Connect the power cable to the power pack and a power socket.

The target module starts as soon as it is supplied with power. During start-up, the channels are automatically grouped (see below).

Automatic grouping of channels

When operating the target module for the first time, the matrix switch recognises the main channel and the target module's additional channel. The channels are automatically added to a *channel group*.

The web application uses the following icons to mark the different types of channels:

- **Main channel:** target module icon with »**MC**« lettering
- **Video channel:** target module icon with blue spot

NOTE: In addition to the data of the KVM main channel, a *multichannel configuration* transmits up to seven additional video channels and/or one USB 2.0 or RS 232 channel.

In the web application, the list of target modules lists grouped modules separately. The ⊞ icon next to the module name shows that the module is part of a channel group.

Click the icon to get information about the channel group.

NOTE: You can adjust any manually or automatically created channel group. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

The Power LED on the front panel of the target module shows the status of the external power pack:

LED	Status	Meaning
Power	On	The external power pack is connected and the required voltage (12 Volt) is available.
	Off	The external power pack is not (properly) connected.

The flashing Transmission LEDs highlight the following operating statuses of the particular connection:

LED	Colour	Status	Meaning
Left	Yellow	Off	No user module accesses the target module.
		On	A user module accesses the target module.
		Blinking	The incoming video signal was not detected.
		Flashing	No voltage at PS/2 interface or USB bus.
Right	Green	Off	The target module is turned off.
		On	A user module accesses the target module.
		Blinking	The connection to the counterpart station could not be established.
		Flashing	The connection to the counterpart station is established. No user module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing user module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

Technical data

DP-HR-U-CPU-FIBER-MC2-UC		
Interfaces to computer	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 1 × USB-B
	Audio:	2 × 3,5 mm jack plug
Date transmission to matrix switches	Interface:	4 × LC-Duplex socket
	Transmission distance:	‣ DVI-CPU-Fiber-UC(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DVI-CPU-Fiber-UC(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DVI-CPU-Fiber-UC(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 Bit
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Power supply	Type:	Portable power pack (12 V/2 A)
	Connector:	1 × Mini-DIN 4 socket
	Power input:	Max. 1.2 A
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	105 × 46 × 164 mm
	Weight:	Approx. 660 g

DP-HR-U-CPU-FIBER-MC2-UC		
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

B User modules

User module »DP-HR-U-CON«

With **DP-HR-U-CON** user modules, you can connect a console (**DisplayPort** monitor, keyboard, mouse and audio devices) to a digital matrix switch of the *ControlCenter-Digital* or the *DVICenter* series.

At the installed console, matrix switch users can access a target module to operate the connected computer.

The data stream of the connected USB devices is transmitted to the active target module with up to 16 Mbit/s (**DVI-U-CPU**, **DP-U-CPU**, **DP-HR-U-CPU** and **VGA-U-CPU** series only).

Package contents

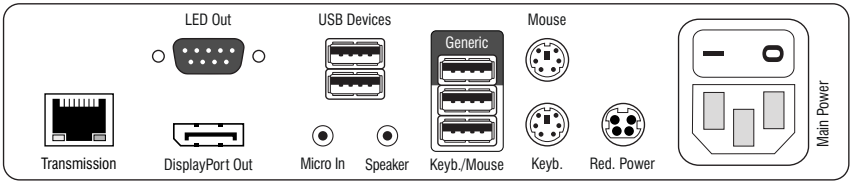
- 1 × **DP-HR-U-CON** user module
- 1 × Power cable

Required accessories

- 1 × Category 5e (or better) twisted pair cable to connect the user module to the matrix switch

Installation

Connecting the console devices



DisplayPort Out: Connect the monitor of the local console.

> **NOTE:** Check the monitor's manual if the OSD provides a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the optional microphone of the local console.

Speaker: Connect the optional speakers of the local console.

> **NOTE:** Both keyboard and mouse signals can be transmitted to the computer using the PS/2 *or* the USB interfaces.

Keyb.: Connect the PS/2 keyboard of the local console.

Mouse: Connect the PS/2 mouse of the local console.

Keyb./Mouse: Connect the USB keyboard and/or USB mouse of the local console.

> **NOTE:** You can also combine PS/2 and USB devices, for example by connecting a USB mouse and a PS/2 keyboard.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 114 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active target module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

USB Devices: Connect any USB devices to these interfaces. The data stream of the connected USB device is transmitted to a compatible target module with up to 16 Mbit/s.

LED Out: If you expanded the functional range of the matrix switch by purchasing the *TradeSwitch function*, connect the optional *TS-LED-2* (order number A6100041) to this interface.

Connection to the matrix switch

Transmission: Use a category 5e (or better) twisted pair cable to connect the *Transmission* interface to a *Dynamic Port* (RJ45) of the matrix switch.

NOTE: You can also connect the target module *directly* to a compatible user module.

Power supply

Main Power: Connect the power cable to the power pack and a power outlet.

Red. Power: If required, connect the power cable of the optional power pack to this interface. This provides a redundant power supply. Connect the power cable with the power pack and a power outlet of a different power circuit.

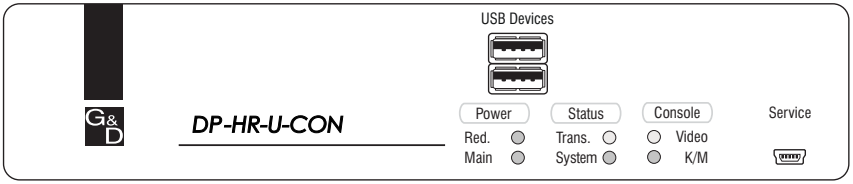
Start-up

Start the user module by pressing the *Main Power* button of the power pack.

ADVICE: The active hotkey configuration is displayed during the *System Startup* of the matrix switch.

Status displays

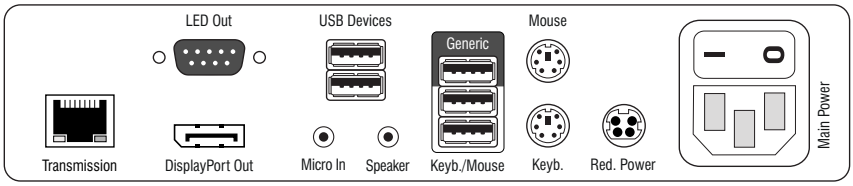
Front panel



The LEDs on the front panel of the user module show the system's operating status.

Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and the required voltage (12 Volt) is available.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack provides the required voltage.
		Off	The power button is turned off or the connection with the mains could not be established. Check the proper connection of the power supply cable.
Status	**Trans.**	On	The communication with the counterpart station could be established.
		Off	The communication with the counterpart station could not be established.
	System	On	The device is booting.
		Blinking	The system is ready for operation.
Console	**Video**	On	Stable image signal at video input.
		Off	The incoming video signal could not be detected or it lacks the required quality to be processed by the system.
	K/M	On	A local keyboard was found.
		Blinking	The CPU input (PS/2 or USB) is active and ready. No local keyboard was found.

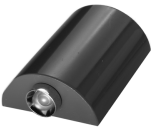
Back panel



The *Transmission* interface at the back panel of the user module provides additional status LEDs. The LEDs have the following meaning:

LED	Colour	Status	Meaning
Left	Yellow	Off	No connection to network.
		On	A user of the matrix switch is logged in or a target module is directly connected.
		Blinking	Network connection to an end device.
Right	Green	On	A user module is accessing the target module.
		Blinking	No communication with the counterpart station.
		Flashing	Connection to the counterpart station established. No user module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing user module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

TradeSwitch-LED



The optional *TS-LED* (order number A6100041) lights if the keyboard and mouse signals of a master console are accessing the user module.

NOTE: Keyboard and mouse signals can only access another user module or a target computer if you activated the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-U-CON		
Interfaces to console:	Video:	1 × DisplayPort
	Keyboard and mouse signals:	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack socket
	USB 2.0:	4 × USB-A socket
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to matrix switch	Interface:	1 × RJ45 socket
	Transmission length:	Max. 140 meters
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) ‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 Bit
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Main power supply	Type:	Internal power pack
	Connection:	1 × IEC plug(IEC-320 C14)
	Current consumption:	100 - 240 VAC; 0.5 A - 0.3 A
Redundant power supply ‣ optional	Type:	External power pack
	Connection:	1 × Mini-DIN 4 socket (Power In)
	Current consumption:	12 VDC; 2.2 A

DP-HR-U-CON		
Casing	Material:	Anodised aluminium
	Dimensions (W × H × D):	210 × 44 × 210 mm
	Weight:	Approx. 1.3 kg
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

User module »DP-HR-U-CON-2«

With **DP-HR-U-CON-2** user modules, you can connect a console (**DisplayPort** monitor, keyboard, mouse and audio devices) to two digital matrix switches of the *ControlCenter-Digital* or the *DVICenter* series.

At the installed console, matrix switch users can access a target module to operate the connected computer.

The data stream of the connected USB devices is transmitted to the active target module with up to 16 Mbit/s (**DVI-U-CPU**, **DP-U-CPU**, **DP-HR-U-CPU** and **VGA-U-CPU** series only).

The buttons on the front panel of the user module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

ADVICE: Instead of a matrix switch, you can also connect a compatible target module to each of the two channels.

Package contents

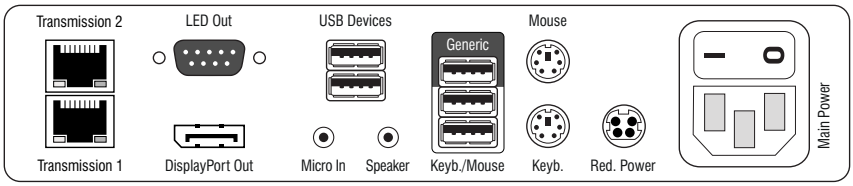
- 1 × **DP-HR-U-CON-2** user module
- 1 × Power cable

Required accessories

- 2 × Category 5e (or better) twisted pair cables to connect the user module to two the matrix switches

Installation

Connecting the console devices



DisplayPort Out: Connect the monitor/projector of the local console.

> **NOTE:** Check the monitor's manual if the OSD provides a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the optional microphone of the local console.

Speaker: Connect the optional speakers of the local console.

> **HINWEIS:** Console keyboard and console mouse can be connected to the user module's USB *or* PS/2 interfaces.

Keyb.: Connect the PS/2 keyboard of the local console.

Mouse: Connect the PS/2 mouse of the local console.

Keyb./Mouse: Connect the USB keyboard and/or the USB mouse of the local console.

> **NOTE:** Mixed operation, for example connecting a USB mouse and a PS/2 keyboard is supported, too.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 114 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active target module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

USB Devices: Connect any USB devices to these interfaces. The data stream of the connected USB device is transmitted to a compatible target module with up to 16 Mbit/s.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED*2 here (order number A6100041).

Connection to the matrix switch

NOTE: Use category 5e (or better) twisted pair cables to connect the devices.

Transmission 1: Connect this interface to a *Dynamic Port* (RJ45) of the matrix switch.

Transmission 2: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

ADVICE: You can also connect the *Transmission* interface *directly* to a compatible target module.

Power supply

Main Power: Connect the power cable to the power pack and a power outlet.

Red. Power: If required, connect the power cable of the optional power pack to this interface. This provides a redundant power supply. Connect the power cable with the power pack and a power outlet of a different power circuit.

Start-up

Start the user module by pressing the *Main Power* button of the power pack.

ADVICE: The active hotkey configuration is displayed during the *System Startup* of the matrix switch and the user module.

Switching

The buttons on the front panel of the user module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

How to switch channels via buttons:

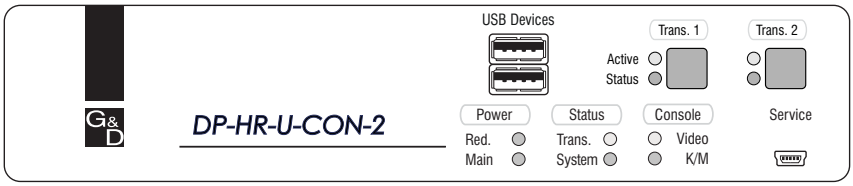
- Press the button of the desired channel to activate it.

How to switch channels via key combinations:

- On the console keyboard, press **Hotkey+Select key**.
  In the default settings, the select keys are **Alt+1** (channel 1) and **Alt+2** (channel 2).

Status displays

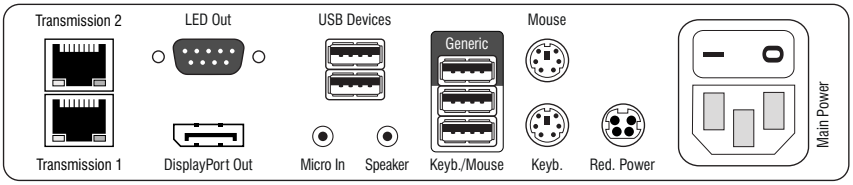
Front panel



The LEDs on the front panel of the user module show the system's operating status.

Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and the required voltage (12 Volt) is available.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack provides the required voltage.
		Off	The power button is turned off or the connection with the mains could not be established. Check the proper connection of the power supply cable.
Status	**Trans.**	On	The communication with the counterpart station could be established.
		Off	The communication with the counterpart station could not be established.
	System	On	The device is booting.
		Blinking	The system is ready for operation.
Console	**Video**	On	Stable image signal at video input.
		Off	The incoming video signal could not be detected or it lacks the required quality to be processed by the system.
	K/M	On	A local keyboard was found.
		Blinking	The CPU input (PS/2 or USB) is active and ready. No local keyboard was found.
Trans.	**Active**	On	Active channel.
		Off	Inactive channel.
	Status	On	The communication with the connected matrix switch or the target module of this channel was established successfully.
		Off	The communication with a matrix switch or target module of this active channel could not be established.

Back panel

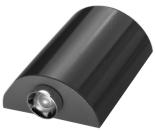


The *Transmission* interface at the back panel of the user module provides additional status LEDs. The LEDs have the following functions:

LED	Colour	Status	Meaning
Left	Yellow	Off	No connection to network.
		On	A user of the matrix switch is logged in or a target module is directly connected.
		Blinking	Network connection to an end device.
		Blinking	Network connection to an end device.
Right	Green	On	A user module is accessing the target module.
		Blinking	No communication with the counterpart station.
		Flashing	Connection to the counterpart station established. No user module is accessing.
		Flickering	Keyboard and mouse inputs are forwarded by the accessing user module. The flickering is defined by the user's entries.
	Yellow	Flashing	A firmware update is carried out.

TradeSwitch-LED

The optional *TS-LED* (order number A6100041) lights if the keyboard and mouse signals of a master console are accessing the user module.



NOTE: Keyboard and mouse signals can only access another user module or a target computer if you purchased the *TradeSwitch feature* for the matrix switch.

Technical data

DP-HR-U-CON-2		
Interfaces to console	Video:	1 × DisplayPort
	Keyboard/mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack socket
	USB 2.0:	4 × USB-A socket
	Tradeswitch-LED:	1 × D-SUB 9 scoket
Data transmission to the matrix switches	Interface:	2 × RJ45 socket
	Transmission length:	Max. 140 meters
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) › Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 Bit
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Main power supply	Type:	Internal power pack
	Connection:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.6 A - 0.3 A
Redundant power supply › optional	Type:	Portable power pack
	Connection:	1 × Mini-DIN 4 socket (Power In)
	Power input:	12 VDC; 2.3 A

DP-HR-U-CON-2		
Casing	Material:	Anodised aluminium
	Dimensions (W × H × D):	210 × 44 × 210 mm
	Weight:	Approx. 1.3 kg
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

User module »DP-HR-U-CON-MC2«

With **DP-HR-U-CON-MC2** user modules, you can connect a dual-monitor console (two **DisplayPort** monitors, keyboard, mouse and audio devices) to a digital matrix switch of the *ControlCenter-Digital* or the *DVICenter* series.

At the installed console, matrix switch users can access a target module to operate the connected computer.

The data stream of the connected USB devices is transmitted to the active target module with up to 16 Mbit/s (**DVI-U-CPU**, **DP-U-CPU**, **DP-HR-U-CPU** and **VGA-U-CPU** series only).

When using the console to access a target module **DP-HR-CPU-MC2** connected to a dual-head computer, the monitors display the separate images of the graphics outputs.

When accessing a target module with one graphics input only, only the first monitor displays an image.

ADVICE: Instead of an **MC2** target module, you can also connect a dual-head computer by using two separate target modules **DP-HR-CPU**.

In this case, add both target modules in the web application to channel group.

Package contents

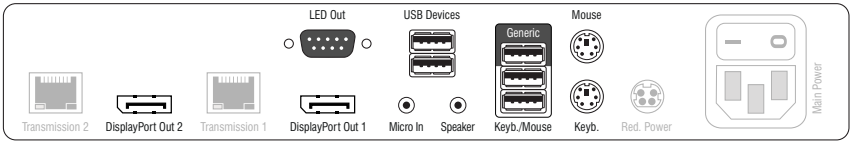
- 1 × User module **DP-HR-U-CON-MC2**
- 1 × Power cable

Required accessories

- 2 × Category 5e (or better) twisted pair cables to connect the user module to a KVM matrix switch

Installation

Connecting console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

> **NOTE:** Check the monitor's manuals if the OSDs provide a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the console microphone (optional).

Speaker: Connect the console speakers (optional).

> **NOTE:** Console keyboard and console mouse can be connected to the user module's USB *or* PS/2 interfaces.

Keyb.: Connect the console's PS/2 keyboard.

Mouse: Connect the console's PS/2 mouse.

Keyb./Mouse: Connect the console's USB keyboard and/or USB mouse.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

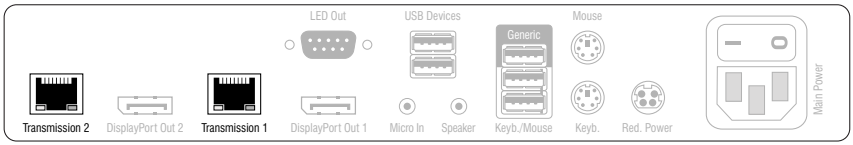
Enable the **Generic HID** mode (see page 114 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active target module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

USB Devices: Connect any USB devices to these interfaces. The data stream of the connected USB device is transmitted to a compatible target module with up to 16 Mbit/s.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED2* here (order number A6100041).

Connection to the matrix switch



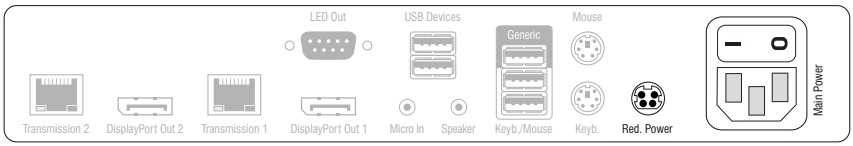
NOTE: Use category 5e (or better) twisted pair cables to connect the devices.

Transmission 1: Connect this interface to a *Dynamic Port* (RJ45) of the matrix switch.

Transmission 2: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

NOTE: You can also connect the target module *directly* to a compatible target module.

Power supply



Main Power: Connect the supplied power cable.
Insert the cable's Schuko plug in a power socket.

Red. Power: Connect the connection cable of a compatible power pack to provide the user module with a second, redundant power supply.

Startup

Turn on the user module after its installation.

Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

Automatic channel grouping

When operating the user module for the first time, the matrix switch recognises the main channel and the user module's additional channel. The channels are automatically added to a channel group.

The web application uses the following icons to mark the different types of channels:

Main channel: computer and user superimposed by the digit 2
Video channel: multiple monitors in a row

NOTE: In addition to the data of the KVM main channel, a *channel group* transmits up to seven additional video channels and/or one USB 2.0 or RS 232 channel.

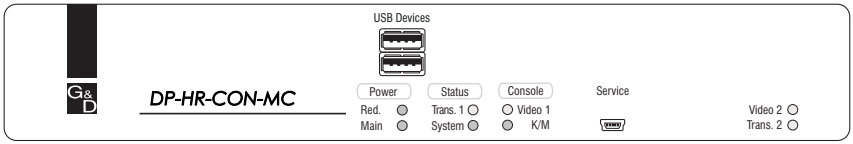
In the web application, the list of user modules lists grouped modules separately. The ⊞ icon next to the module name shows that the module is part of a channel group.

Click the icon to get information about the channel group.

NOTE: You can adjust adjsut any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

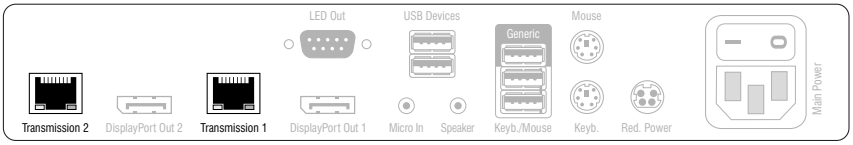
Status displays

Front panel



Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and the required voltage (12 Volt) is available.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack provides the required voltage.
		Off	The power button is turned off or the connection with the mains could not be established. Check the proper connection of the power supply cable.
Status	**Trans. 1**	On	The communication with the counterpart station could be established.
		Off	The communication with the counterpart station could not be established.
	System	On	The device is booting.
		Blinking	The system is ready for operation.
Console	**Video 1**	On	Stable image signal at video input.
		Off	The incoming video signal could not be detected or it lacks the required quality to be processed by the system.
	K/M	On	A local keyboard was found.
		Blinking	The CPU input (PS/2 or USB) is active and ready. No local keyboard was found.
MC2	**Video 2**	On	Strong video signal at second video input.
		Off	No signal at second video input, or the signal quality is too weak to be processed by the system.
	Trans. 2	On	The communication to the matrix switch is established successfully.
		Off	The communication to the matrix switch could not be established.

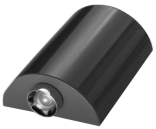
Back panel



The *Transmission* interfaces at the user module's back panel provide additional status LEDs.

Interface	LED	Status	Meaning
Transmission 1	**Yellow**	Off	No data connection to matrix switch.
		Flashing	Data connection to matrix switch established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.
Transmission 2	**Yellow**	Off	No data connection to matrix switch.
		On	Data connection to matrix switch established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.

TradeSwitch-LED



The optionally available *TS-LED* (item number A6100041) flashes when keyboard and mouse signals of a master console are switched to the user module.

NOTE: Keyboard and mouse signals can only be switched to another user module or target computer if you purchased the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-U-CON-MC2		
Interfaces to console	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack plug
	USB 2.0:	4 × USB-A socket
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to matrix switch	Interfaces:	2 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) › Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 bits
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Main power supply	Type:	Internal power pack
	Connector:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.6 A - 0.3 A
Redundant power supply › optional	Type:	External power pack
	Connector:	1 × Mini-DIN 4 socket
	Power input:	12 VDC; 2.6A

DP-HR-U-CON-MC2		
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	270 × 44 × 210 mm
	Weight:	Approx. 1.6 kg
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non condensing
Conformity		CE, RoHS

User module »DP-HR-U-CON-MC4«

With **DP-HR-U-CON-MC4** user modules, you can connect a dual-monitor console (four **DisplayPort** monitors, keyboard, mouse and audio devices) to a digital matrix switch of the *ControlCenter-Digital* or the *DVICenter* series.

At the installed console, matrix switch users can access a target module to operate the connected computer.

The data stream of the connected USB devices is transmitted to the active target module with up to 16 Mbit/s (**DVI-U-CPU**, **DP-U-CPU**, **DP-HR-U-CPU** and **VGA-U-CPU** series only).

When using the console to access a multi-monitor computer with four graphics outputs, the separate images of the graphics outputs are displayed on the console monitors.

> **NOTE:** Connecting a multi-monitor computer with four video outputs requires four target modules of the **DP-HR-CPU** series or two target modules of the **DP-HR-CPU-MC2** series.
>
> In the web application, you can add the target modules of the multi-monitor computers to a channel groups More information about this topic is given in the chapter *Expanding the system through port grouping* of the web application manual.

When accessing the system with a target module with only one graphics input, only the first monitor shows an image.

Package contents

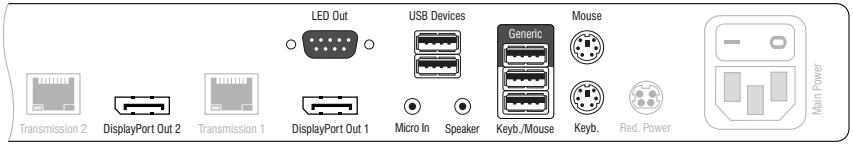
- 1 × User module **DP-HR-U-CON-MC4**
- 1 × Power cable

Required accessories

- 4 × Category 5e (or better) twisted pair cables to connect the user module to the matrix switch

Installation

Connecting the console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

> **NOTE:** Check the monitor's manuals if the OSDs provide a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the console microphone (optional).

Speaker: Connect the console speakers (optional).

> **NOTE:** Console keyboard and console mouse can be connected to the user module's USB *or* PS/2 interfaces.

Keyb.: Connect the console PS/2 keyboard.

Mouse: Connect the console PS/2 mouse.

Keyb./Mouse: Connect the console USB keyboard and/or USB mouse.

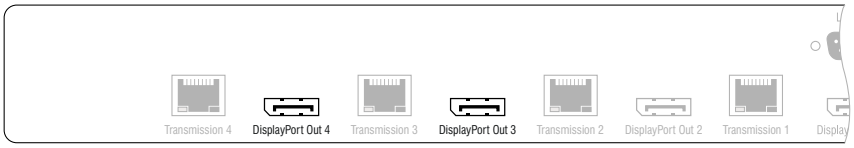
Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 114 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active target module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

USB Devices: Connect any USB devices to these interfaces. The data stream of the connected USB device is transmitted to a compatible target module with up to 16 Mbit/s.

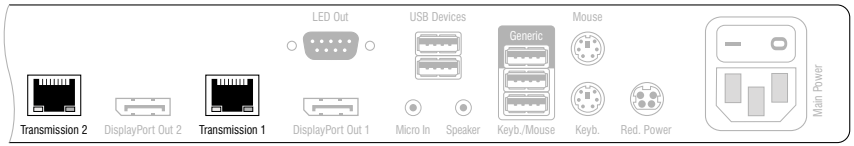
LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED2* here (order number A6100041).



DisplayPort Out 3: Connect the third console monitor.

DisplayPort Out 4: Connect the fourth console monitor.

Connection to the matrix switch

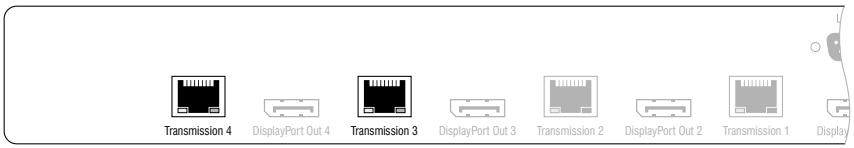


NOTE: Use category 5e (or better) twisted pair cables to connect the devices.

ADVICE: You can also connect the target module directly to a compatible target module.

Transmission 1: Connect this interface to a *Dynamic Port* (RJ45) of the matrix switch.

Transmission 2: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

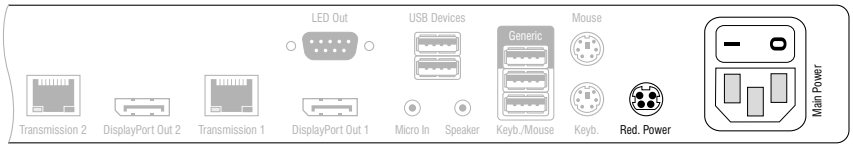


NOTE: Use category 5e (or better) twisted pair cables to connect the devices.

Transmission 3: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

Transmission 4: Connect this interface to another *Dynamic Port* (RJ45) of the matrix switch.

Power supply



Main Power: Connect the supplied power cable.
Insert the cable's Schuko plug in a power socket.

Red. Power: Connect the connection cable of a compatible power pack to provide the user module with a second, redundant power supply.

Startup

Turn on the user module after its installation.

Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

Automatic channel grouping

When operating the user module for the first time, the matrix switch recognises the main channel and the user module's additional channel. The channels are automatically added to a channel group.

The web application uses the following icons to mark the different types of channels:

Main channel: computer and user superimposed by the digit 2
Video channel: multiple monitors in a row

NOTE: In addition to the data of the KVM main channel, a *channel group* transmits up to seven additional video channels and/or one USB 2.0 or RS 232 channel.

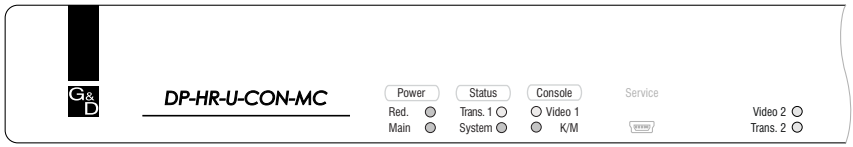
In the web application, the list of user modules lists grouped modules separately. The ⊞ icon next to the module name shows that the module is part of a channel group.

Click the icon to get information about the channel group.

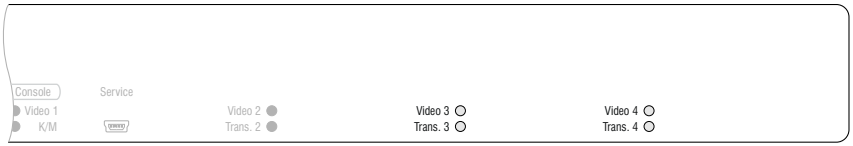
NOTE: You can adjust adjsut any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

Front panel

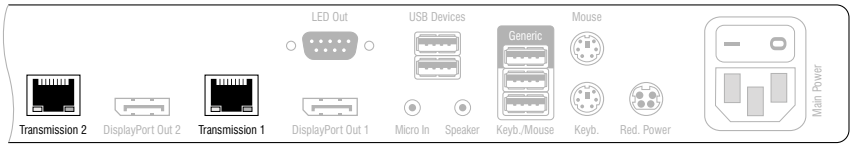


Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and the required voltage (12 Volt) is available.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack provides the required voltage.
		Off	The power button is turned off or the connection with the mains could not be established. Check the proper connection of the power supply cable.
Status	**Trans. 1**	On	The communication with the counterpart station could be established.
		Off	The communication with the counterpart station could not be established.
	System	On	The device is booting.
		Blinking	The system is ready for operation.
Console	**Video 1**	On	Stable image signal at video input.
		Off	The incoming video signal could not be detected or it lacks the required quality to be processed by the system.
	K/M	On	A local keyboard was found.
		Blinking	The CPU input (PS/2 or USB) is active and ready. No local keyboard was found.
MC2	**Video 2**	On	Strong video signal at second video input.
		Off	No signal at second video input, or the signal quality is too weak to be processed by the system.
	Trans. 2	On	The communication to the matrix switch is established successfully.
		Off	The communication to the matrix switch could not be established.



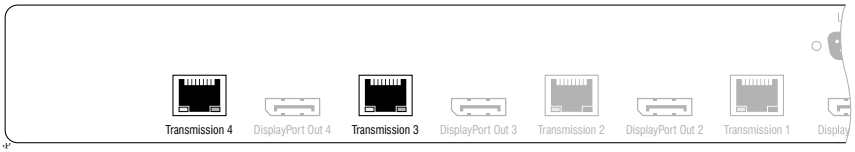
MC3	**Video 3**	On	Strong video signal atthird video input.
		Off	No signal at third video input, or the signal quality is too weak to be processed by the system.
	Trans. 3	On	The communication to the matrix switch is established successfully.
		Off	The communication to the matrix switch could not be established.
MC4	**Video 4**	On	Strong video signal at fourth video input.
		Off	No signal at fourth video input, or the signal quality is too weak to be processed by the system.
	Trans. 4	On	The communication to the matrix switch is established successfully.
		Off	The communication to the matrix switch could not be established.

Back panel



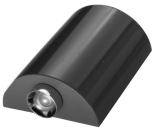
The *Transmission* interfaces at the user module's back panel provide additional status LEDs.

Interface	LED	Status	Meaning
Transmission 1	**Yellow**	Off	No data connection to matrix switch.
		Blinking	Data connection to matrix switch established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.
Transmission 2	**Yellow**	Off	No data connection to matrix switch.
		On	Data connection to matrix switch established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.



Interface	LED	Status	Meaning
Transmission 3	**Yellow**	Off	No data connection to matrix switch.
		Blink-ing	Data connection to matrix switch established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.
Transmission 4	**Yellow**	Off	No data connection to matrix switch.
		On	Data connection to matrix switch established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.

TradeSwitch-LED



The optionally available *TS-LED* (item number A6100041) flashes when keyboard and mouse signals of a master console are switched to the user module.

NOTE: Keyboard and mouse signals can only be switched to another user module or target computer if you purchased the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-U-CON-MC4		
Interfaces to console	Video:	4 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack plug
	USB 2.0:	4 × USB-A socket
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to matrix switch	Interfaces:	4 × RJ45 socket
	Transmission distance:	Max. 140 metres
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz) › Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 bits
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s
Main power supply	Type:	Internal power pack
	Connector:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.6 A - 0.4 A
Redundant power supply	Type:	External power pack
	Connector:	1 × Mini-DIN 4-Buchse
	Power input:	12 VDC; 3.5A

DP-HR-U-CON-MC4		
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	435 × 44 × 210 mm
	Weight:	Approx. 2.3 kg
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non condensing
Conformity		CE, RoHS

User module »DP-HR-U-CON-Fiber«

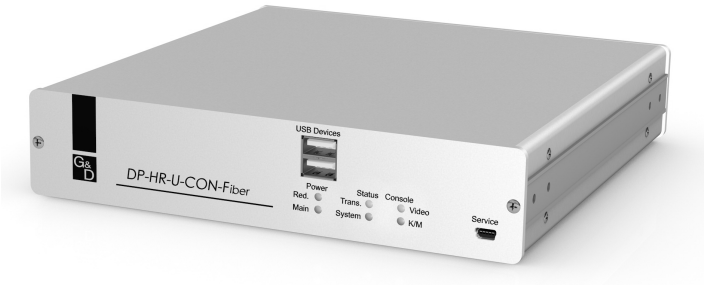
With **DP-HR-U-CON-Fiber** user modules, you can connect a console (**DisplayPort** monitor, keyboard, mouse and audio devices) to a digital matrix switch of the *ControlCenter-Digital* series.

NOTE: The user module con be connected only to an I/O card of the **CCD-I/O 16-Card-Fiber** series.

NOTE: Both, the user module and the I/O card are available as *single-mode* variants or as *multi-mode* variants. Make sure that the port at the user module, the *DynamicPort* at the IO card and the optical fibres are compatible with each other.

At the installed console, matrix switch users can access a target module to operate the connected computer.

The data stream of the connected USB devices is transmitted to the active target module with up to 16 Mbit/s (**DVI-U-CPU**, **DP-U-CPU**, **DP-HR-U-CPU** and **VGA-U-CPU** series only).



Package contents

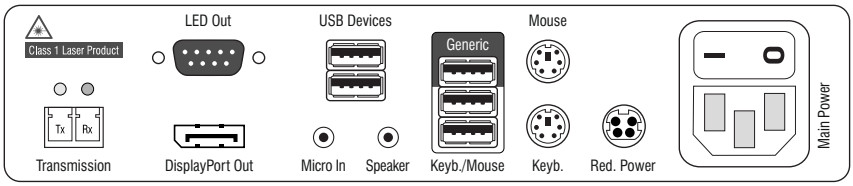
- 1 × **DP-HR-U-CON-Fiber** user module
- 1 × Power cable

Required accessories

- 1 × Compatible optical fibre cable to connect the user module to the matrix switch

Installation

Connecting the console devices



DisplayPort Out: Connect the monitor of the local console.

> **NOTE:** Check the monitor's manual if the OSD provides a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the optional microphone of the local console.

Speaker: Connect the optional speakers of the local console.

> **NOTE:** Both keyboard and mouse signals can be transmitted to the computer using the PS/2 *or* the USB interfaces.

Keyb.: Connect the PS/2 keyboard of the local console.

Mouse: Connect the PS/2 mouse of the local console.

Keyb./Mouse: Connect the USB keyboard and/or USB mouse of the local console.

> **NOTE:** You can also combine PS/2 and USB devices, for example by connecting a USB mouse and a PS/2 keyboard.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 114 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active target module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

USB Devices: Connect any USB devices to these interfaces. The data stream of the connected USB device is transmitted to a compatible target module with up to 16 Mbit/s.

LED Out: If you expanded the functional range of the matrix switch by purchasing the *TradeSwitch function*, connect the optional *TS-LED-2* (order number A6100041) to this interface.

Connection to the matrix switch

IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements according to **EN 60825-1:2007** and **EN 60825-2:2004+A1:2007** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid eye contact with invisible laser beam* on page 2
- *Always connect optical connections or cover them with protection caps* on page 2
- *Only use G&D certified transmission modules* on page 2

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

Transmission|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Transmission|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

NOTE: You can also connect the target module *directly* to a compatible user module.

Power supply

Main Power: Connect the power cable to the power pack and a power outlet.

Red. Power: If required, connect the power cable of the optional power pack to this interface. This provides a redundant power supply. Connect the power cable with the power pack and a power outlet of a different power circuit.

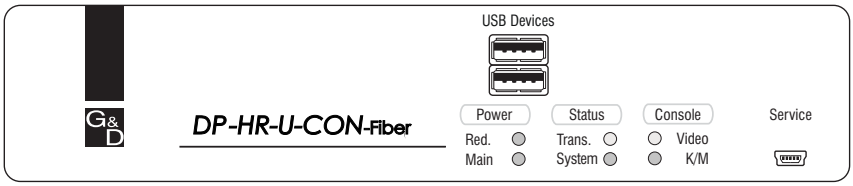
Start-up

Start the user module by pressing the *Main Power* button of the power pack.

ADVICE: The active hotkey configuration is displayed during the *System Startup* of the matrix switch.

Status displays

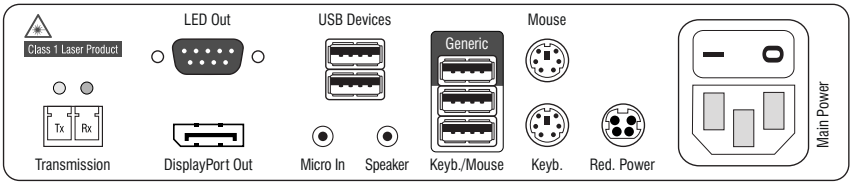
Front panel



The LEDs on the front panel of the user module show the system's operating status.

Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and the required voltage (12 Volt) is available.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack provides the required voltage.
		Off	The power button is turned off or the connection with the mains could not be established. Check the proper connection of the power supply cable.
Status	**Trans.**	On	The communication with the counterpart station could be established.
		Off	The communication with the counterpart station could not be established.
	System	On	The device is booting.
		Blinking	The system is ready for operation.
Console	**Video**	On	Stable image signal at video input.
		Off	The incoming video signal could not be detected or it lacks the required quality to be processed by the system.
	K/M	On	A local keyboard was found.
		Blinking	The CPU input (PS/2 or USB) is active and ready. No local keyboard was found.

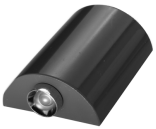
Back panel



The *Transmission* interface at the back panel of the user module provides additional status LEDs. The LEDs have the following meaning:

Interface	LED	Status	Meaning
Transmission	**Yellow**	Off	No data connection to the counterpart station.
		Flashing	Data connection to the counterpart station established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.

TradeSwitch-LED



The optional *TS-LED* (order number A6100041) lights if the keyboard and mouse signals of a master console are accessing the user module.

NOTE: Keyboard and mouse signals can only access another user module or a target computer if you activated the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-U-CON-FIBER		
Interfaces to console:	Video:	1 × DisplayPort
	Keyboard and mouse signals:	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack socket
	USB 2.0:	4 × USB-A socket
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to the matrix switch	Interface:	1 × LC-Duplex socket
	Transmission distance:	‣ DVI-CPU-Fiber(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DVI-CPU-Fiber(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DVI-CPU-Fiber(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 Bit
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s

DP-HR-U-CON-FIBER		
Main power supply	Type:	Internal power pack
	Connection:	1 × IEC plug(IEC-320 C14)
	Current consumption:	100 - 240 VAC; 0.6 A - 0.3 A
Redundant power supply	Type:	External power pack
	Connection:	1 × Mini-DIN 4 socket(Power In)
	Current consumption:	12 VDC; 2.3 A
Casing	Material:	Anodised aluminium
	Dimensions (W × H × D):	210 × 44 × 210 mm
	Weight:	Approx. 1.3 kg
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

User module »DP-HR-U-CON-2-Fiber«

With **DP-HR-U-CON-2-Fiber** user modules, you can connect a console (**DisplayPort** monitor, keyboard, mouse and audio devices) to two digital matrix switches of the *ControlCenter-Digital* series.

NOTE: The user module con be connected only to I/O cards of the **CCD-I/O 16-Card-Fiber** series.

NOTE: Both, the user module and the I/O cards are available as *single-mode* variants or as *multi-mode* variants. Make sure that the port at the user module, the *Dynamic-Port* at the IO card and the optical fibres are compatible with each other.

At the installed console, matrix switch users can access a target module to operate the connected computer.

The data stream of the connected USB devices is transmitted to the active target module with up to 16 Mbit/s (**DVI-U-CPU**, **DP-U-CPU**, **DP-HR-U-CPU** and **VGA-U-CPU** series only).

The buttons on the front panel of the user module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

ADVICE: Instead of a matrix switch, you can also connect a compatible target module to each of the two channels.

Package contents

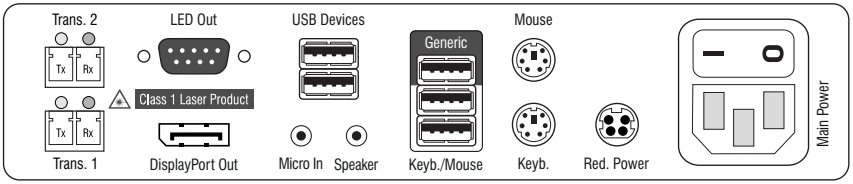
- 1 × **DP-HR-U-CON-2-Fiber** user module
- 1 × Power cable

Required accessories

- 2 × Compatible optical fibre cable to connect the user module to two matrix switches

Installation

Connecting the console devices



DisplayPort Out: Connect the monitor/projector of the local console.

> **NOTE:** Check the monitor's manual if the OSD provides a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the optional microphone of the local console.

Speaker: Connect the optional speakers of the local console.

> **HINWEIS:** Console keyboard and console mouse can be connected to the user module's USB *or* PS/2 interfaces.

Keyb.: Connect the PS/2 keyboard of the local console.

Mouse: Connect the PS/2 mouse of the local console.

Keyb./Mouse: Connect the USB keyboard and/or the USB mouse of the local console.

> **NOTE:** Mixed operation, for example connecting a USB mouse and a PS/2 keyboard is supported, too.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 114 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active target module.

> **IMPORTANT:** With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

USB Devices: Connect any USB devices to these interfaces. The data stream of the connected USB device is transmitted to a compatible target module with up to 16 Mbit/s.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED*2 here (order number A6100041).

Connection to the matrix switches

IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements according to **EN 60825-1:2007** and **EN 60825-2:2004+A1:2007** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid eye contact with invisible laser beam* on page 2
- *Always connect optical connections or cover them with protection caps* on page 2
- *Only use G&D certified transmission modules* on page 2

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

Trans. 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the first matrix switch.

Trans. 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the first matrix switch.

Trans. 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the second matrix switch.

Trans. 2|Rx : Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the second matrix switch.

ADVICE: You can also connect the *Transmission* interface *directly* to a compatible target module.

Power supply

Main Power: Connect the power cable to the power pack and a power outlet.

Red. Power: If required, connect the power cable of the optional power pack to this interface. This provides a redundant power supply. Connect the power cable with the power pack and a power outlet of a different power circuit.

Start-up

Start the user module by pressing the *Main Power* button of the power pack.

ADVICE: The active hotkey configuration is displayed during the *System Startup* of the matrix switch and the user module.

Switching

The buttons on the front panel of the user module or configured key combinations (*select keys*) let users switch between the connected matrix switches.

How to switch channels via buttons:

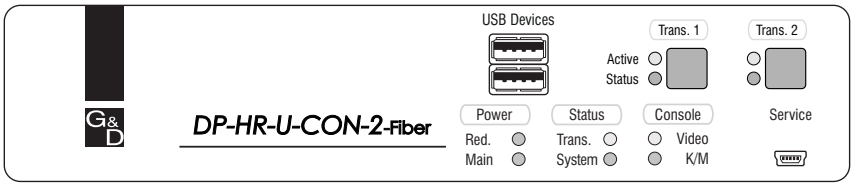
- Press the button of the desired channel to activate it.

How to switch channels via key combinations:

- On the console keyboard, press **Hotkey+Select key**.
  In the default settings, the select keys are **Alt+1** (channel 1) and **Alt+2** (channel 2).

Status displays

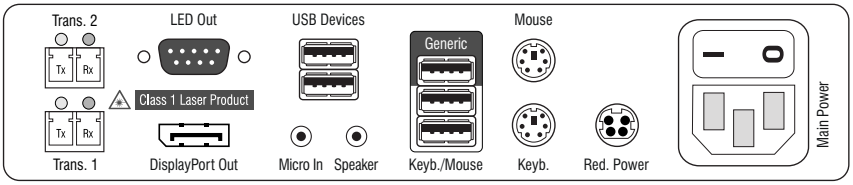
Front panel



The LEDs on the front panel of the user module show the system's operating status.

Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and the required voltage (12 Volt) is available.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack provides the required voltage.
		Off	The power button is turned off or the connection with the mains could not be established. Check the proper connection of the power supply cable.
Status	**Trans.**	On	The communication with the counterpart station could be established.
		Off	The communication with the counterpart station could not be established.
	System	On	The device is booting.
		Blinking	The system is ready for operation.
Console	**Video**	On	Stable image signal at video input.
		Off	The incoming video signal could not be detected or it lacks the required quality to be processed by the system.
	K/M	On	A local keyboard was found.
		Blinking	The CPU input (PS/2 or USB) is active and ready. No local keyboard was found.
Trans.	**Active**	On	Active channel.
		Off	Inactive channel.
	Status	On	The communication with the connected matrix switch or the target module of this channel was established successfully.
		Off	The communication with a matrix switch or target module of this active channel could not be established.

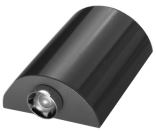
Back panel



The *Transmission* interface at the back panel of the user module provides additional status LEDs. The LEDs have the following functions:

Interface	LED	Status	Meaning
Transmission 1	**Yellow**	Off	No data connection to the counterpart station.
		Flashing	Data connection to the counterpart station established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.
Transmission 2	**Yellow**	Off	No data connection to the counterpart station.
		On	Data connection to the counterpart station established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.

TradeSwitch-LED



The optional *TS-LED* (order number A6100041) lights if the keyboard and mouse signals of a master console are accessing the user module.

NOTE: Keyboard and mouse signals can only access another user module or a target computer if you purchased the *TradeSwitch feature* for the matrix switch.

Technical data

DP-HR-U-CON-2-FIBER		
Interfaces to console	Video:	1 × DisplayPort
	Keyboard/mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack socket
	USB 2.0:	4 × USB-A socket
	Tradeswitch-LED:	1 × D-SUB 9 scoket
Data transmission to matrix switches	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DVI-CPU-Fiber-UC(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DVI-CPU-Fiber-UC(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DVI-CPU-Fiber-UC(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 Bit
	Sampling rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s

DP-HR-U-CON-2-FIBER		
Main power supply	Type:	Internal power pack
	Connection:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.6 A - 0.3 A
Redundant power supply ‣ optional	Type:	Portable power pack
	Connection:	1 × Mini-DIN 4 socket (Power In)
	Power input:	12 VDC; 2.4 A
Casing	Material:	Anodised aluminium
	Dimensions (W × H × D):	210 × 44 × 210 mm
	Weight:	Approx. 1.3 kg
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non-condensing
Conformity		CE, RoHS

User module »DP-HR-U-CON-Fiber-MC2«

With **DP-HR-U-CON-Fiber-MC2** user modules, you can connect a dual-monitor console (two **DisplayPort** monitors, keyboard, mouse and audio devices) to a digital matrix switch of the *ControlCenter-Digital* series.

NOTE: The user module con be connected only to I/O cards of the **CCD-I/O 16-Card-Fiber** series.

NOTE: Both, the user module and the I/O cards are available as *single-mode* variants or as *multi-mode* variants. Make sure that the port at the user module, the *Dynamic-Port* at the IO card and the optical fibres are compatible with each other.

At the installed console, matrix switch users can access a target module to operate the connected computer.

The data stream of the connected USB devices is transmitted to the active target module with up to 16 Mbit/s (**DVI-U-CPU**, **DP-U-CPU**, **DP-HR-U-CPU** and **VGA-U-CPU** series only).

When using the console to access a target module **DP-HR-U-CPU-MC2** connected to a dual-head computer, the monitors display the separate images of the graphics outputs.

When accessing a target module with one graphics input only, only the first monitor displays an image.

ADVICE: Instead of an **MC2** target module, you can also connect a dual-head computer by using two separate target modules **DP-HR-U-CPU**.

In this case, add both target modules in the web application to channel group.

Package contents

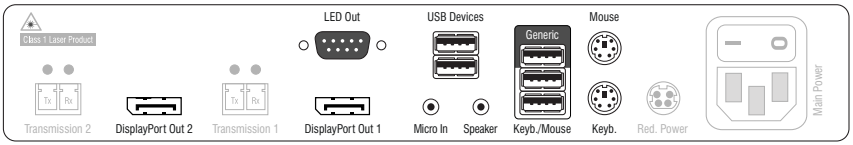
- 1 × User module **DP-HR-U-CON-Fiber-MC2**
- 1 × Power cable

Required accessories

- 2 × Compatible optical fibre cable to connect the user module to a KVM matrix switch of the *ControlCenter-Digital* series

Installation

Connecting console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

NOTE: Check the monitor's manuals if the OSDs provide a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the console microphone (optional).

Speaker: Connect the console speakers (optional).

NOTE: Console keyboard and console mouse can be connected to the user module's USB *or* PS/2 interfaces.

Keyb.: Connect the console's PS/2 keyboard.

Mouse: Connect the console's PS/2 mouse.

Keyb./Mouse: Connect the console's USB keyboard and/or USB mouse.

Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 114 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active target module.

IMPORTANT: With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

USB Devices: Connect any USB devices to these interfaces. The data stream of the connected USB device is transmitted to a compatible target module with up to 16 Mbit/s.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED*2 here (order number A6100041).

Connection to the matrix switch

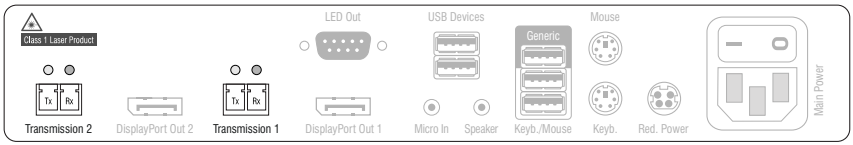
IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements according to **EN 60825-1:2007** and **EN 60825-2:2004+A1:2007** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid eye contact with invisible laser beam* on page 2
- *Always connect optical connections or cover them with protection caps* on page 2
- *Only use G&D certified transmission modules* on page 2

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.



Transmission 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

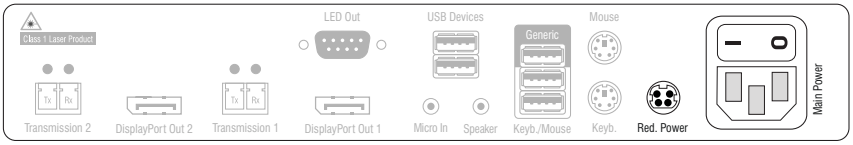
Transmission 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Transmission 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the matrix switch.

Transmission 2|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

ADVICE: You can also connect the user module *directly* to a compatible target module.

Power supply



Main Power: Connect the supplied power cable. Insert the cable's Schuko plug in a power socket.

Red. Power: Connect the connection cable of a compatible power pack to provide the user module with a second, redundant power supply.

Startup

Turn on the user module after its installation.

Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

Automatic channel grouping

When operating the user module for the first time, the matrix switch recognises the main channel and the user module's additional channel. The channels are automatically added to a channel group.

The web application uses the following icons to mark the different types of channels:

Main channel: computer and user superimposed by the digit 2
Video channel: multiple monitors in a row

NOTE: In addition to the data of the KVM main channel, a *channel group* transmits up to seven additional video channels and/or one USB 2.0 or RS 232 channel.

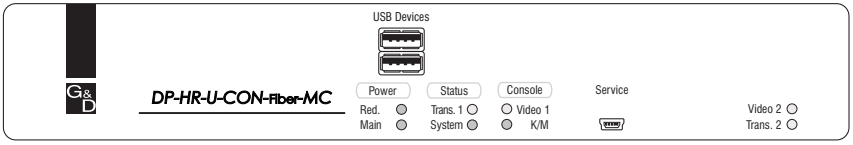
In the web application, the list of user modules lists grouped modules separately. The ⊞ icon next to the module name shows that the module is part of a channel group.

Click the icon to get information about the channel group.

NOTE: You can adjust adjsut any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

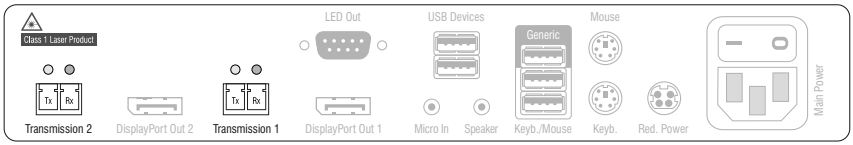
Status displays

Front panel



Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and the required voltage (12 Volt) is available.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack provides the required voltage.
		Off	The power button is turned off or the connection with the mains could not be established. Check the proper connection of the power supply cable.
Status	**Trans. 1**	On	The communication with the counterpart station could be established.
		Off	The communication with the counterpart station could not be established.
	System	On	The device is booting.
		Blinking	The system is ready for operation.
Console	**Video 1**	On	Stable image signal at video input.
		Off	The incoming video signal could not be detected or it lacks the required quality to be processed by the system.
	K/M	On	A local keyboard was found.
		Blinking	The CPU input (PS/2 or USB) is active and ready. No local keyboard was found.
MC2	**Video 2**	On	Strong video signal at second video input.
		Off	No signal at second video input, or the signal quality is too weak to be processed by the system.
	Trans. 2	On	The communication to the matrix switch is established successfully.
		Off	The communication to the matrix switch could not be established.

Back panel

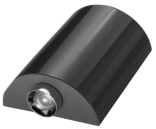


The *Transmission* interfaces at the user module's back panel provide additional status LEDs.

Interface	LED	Status	Meaning
Transmission 1	**Yellow**	Off	No data connection to the counterpart station.
		Flashing	Data connection to the counterpart station established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.
Transmission 2	**Yellow**	Off	No data connection to the counterpart station.
		On	Data connection to the counterpart station established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.

TradeSwitch-LED

The optionally available *TS-LED* (item number A6100041) flashes when keyboard and mouse signals of a master console are switched to the user module.



NOTE: Keyboard and mouse signals can only be switched to another user module or target computer if you purchased the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-U-CON-FIBER-MC2		
Interfaces to console	Video:	2 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack plug
	USB 2.0:	4 × USB-A socket
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to the matrix switch	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DVI-CPU-Fiber-UC(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DVI-CPU-Fiber-UC(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DVI-CPU-Fiber-UC(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 bits
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s

DP-HR-U-CON-FIBER-MC2		
Main power supply	Type:	Internal power pack
	Connector:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.7 A - 0.3 A
Redundant power supply	Type:	External power pack
	Connector:	1 × Mini-DIN 4 socket
	Power input:	12 VDC; 2.8A
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	270 × 44 × 210 mm
	Weight:	Approx. 1.6 kg
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non condensing
Conformity		CE, RoHS

User module »DP-HR-U-CON-Fiber-MC4«

With **DP-HR-U-CON-Fiber-MC4** user modules, you can connect a dual-monitor console (four **DisplayPort** monitors, keyboard, mouse and audio devices) to a digital matrix switch of the *ControlCenter-Digital* series.

NOTE: The user module con be connected only to I/O cards of the **CCD-I/O 16-Card-Fiber** series.

NOTE: Both, the user module and the I/O cards are available as *single-mode* variants or as *multi-mode* variants. Make sure that the port at the user module, the *Dynamic-Port* at the IO card and the optical fibres are compatible with each other.

At the installed console, matrix switch users can access a target module to operate the connected computer.

The data stream of the connected USB devices is transmitted to the active target module with up to 16 Mbit/s (**DVI-U-CPU**, **DP-U-CPU**, **DP-HR-U-CPU** and **VGA-U-CPU** series only).

When using the console to access a multi-monitor computer with four graphics outputs, the separate images of the graphics outputs are displayed on the console monitors.

NOTE: Connecting a multi-monitor computer with four video outputs requires four target modules of the **DP-HR-U-CPU** series or two target modules of the **DP-HR-U-CPU-MC2** series.

In the web application, you can add the target modules of the multi-monitor computers to a channel groups More information about this topic is given in the chapter *Expanding the system through port grouping* of the web application manual.

When accessing the system with a target module with only one graphics input, only the first monitor shows an image.

Package contents

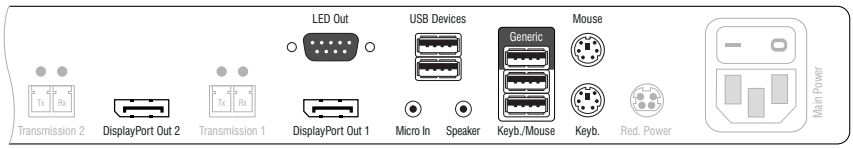
- 1 × User module **DP-HR-U-CON-Fiber-MC4**
- 1 × Power cable

Required accessories

- 4 × Compatible optical fibre cable to connect the user module to a KVM matrix switch of the *ControlCenter-Digital* series

Installation

Connecting the console devices



DisplayPort Out 1: Connect the first console monitor.

DisplayPort Out 2: Connect the second console monitor.

NOTE: Check the monitor's manuals if the OSDs provide a setting for the mode of the DisplayPort input. If so, select the mode in which the image data is processed according to the standard *DisplayPort 1.1*.

Micro In: Connect the console microphone (optional).

Speaker: Connect the console speakers (optional).

NOTE: Console keyboard and console mouse can be connected to the user module's USB *or* PS/2 interfaces.

Keyb.: Connect the console PS/2 keyboard.

Mouse: Connect the console PS/2 mouse.

Keyb./Mouse: Connect the console USB keyboard and/or USB mouse.

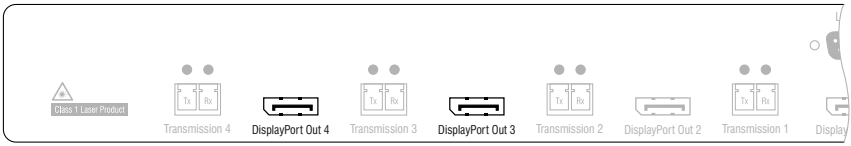
Generic: By default (**Keyb./Mouse** mode), you can use this interface to connect another USB input device or supported displays or tablets.

Enable the **Generic HID** mode (see page 114 f.) if you want to connect another USB input device. In this mode, data of the USB input device remains unaltered when transmitted to the active target module.

IMPORTANT: With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

USB Devices: Connect any USB devices to these interfaces. The data stream of the connected USB device is transmitted to a compatible target module with up to 16 Mbit/s.

LED Out: If you purchased and added the *TradeSwitch feature* to the matrix switch, connect the optional *TS-LED*2 here (order number A6100041).



DisplayPort Out 3: Connect the third console monitor.

DisplayPort Out 4: Connect the fourth console monitor.

Connection to the matrix switch

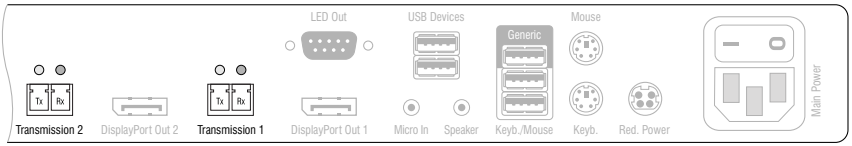
IMPORTANT: The devices use components with laser technology which comply with laser class 1.

They meet the requirements according to **EN 60825-1:2007** and **EN 60825-2:2004+A1:2007** as well as **U.S. CFR 1040.10** and **1040.11**.

Mind the following instructions when dealing with laser beams:

- *Avoid eye contact with invisible laser beam* on page 2
- *Always connect optical connections or cover them with protection caps* on page 2
- *Only use G&D certified transmission modules* on page 2

NOTE: Use optical fibres with LC plugs to connect the devices. The cables are available as accessories.

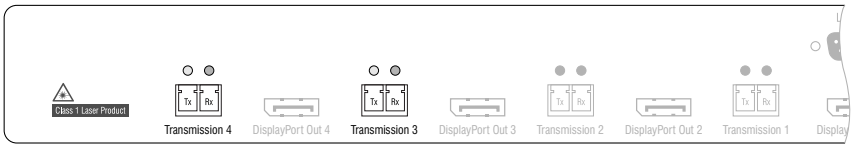


Transmission 1|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Transmission 1|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Transmission 2|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the matrix switch.

Transmission 2|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.



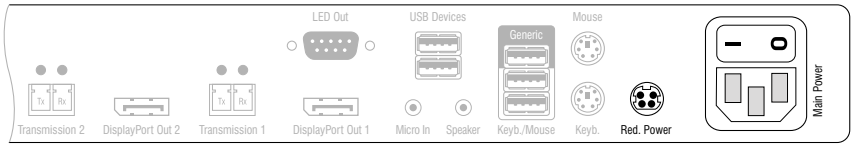
Transmission 3|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of a *Dynamic Port* provided at the matrix switch.

Transmission 3|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Transmission 4|Tx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Rx** interface of another *Dynamic Port* provided at the matrix switch.

Transmission 4|Rx: Insert the LC plug of a compatible optical fibre cable. Connect the other end of the cable to the **Tx** interface of the same *Dynamic Port* provided at the matrix switch.

Power supply



Main Power: Connect the supplied power cable.
Insert the cable's Schuko plug in a power socket.

Red. Power: Connect the connection cable of a compatible power pack to provide the user module with a second, redundant power supply.

Startup

Turn on the user module after its installation.

Use the **Main Power** power pack or a redundant power pack to establish the power supply:

- Turn on the **Main Power** power pack.
- Use an optional power pack to supply the **Red. Power** socket with power.

Automatic channel grouping

When operating the user module for the first time, the matrix switch recognises the main channel and the user module's additional channel. The channels are automatically added to a channel group.

The web application uses the following icons to mark the different types of channels:

Main channel: computer and user superimposed by the digit 2
Video channel: multiple monitors in a row

NOTE: In addition to the data of the KVM main channel, a *channel group* transmits up to seven additional video channels and/or one USB 2.0 or RS 232 channel.

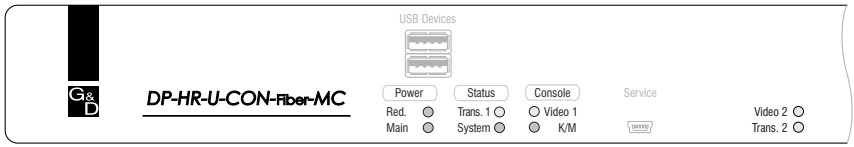
In the web application, the list of user modules lists grouped modules separately. The ⊞ icon next to the module name shows that the module is part of a channel group.

Click the icon to get information about the channel group.

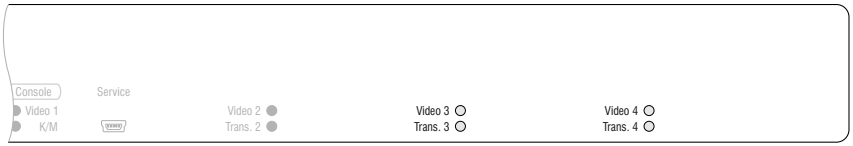
NOTE: You can adjust adjsut any channel groups that were created automatically or manually. More information about channel groups is given in the separate manuals of the matrix switch web applications.

Status displays

Front panel

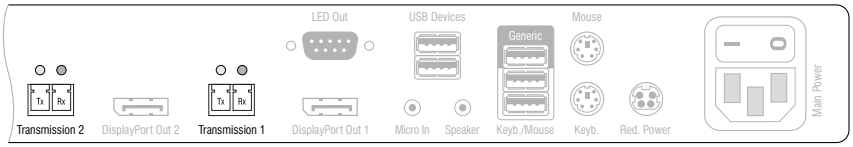


Section	LED	Status	Meaning
Power	**Red.**	On	The optional power pack is connected and the required voltage (12 Volt) is available.
		Off	The optional power pack is not (properly) connected.
	Main	On	The power pack provides the required voltage.
		Off	The power button is turned off or the connection with the mains could not be established. Check the proper connection of the power supply cable.
Status	**Trans. 1**	On	The communication with the counterpart station could be established.
		Off	The communication with the counterpart station could not be established.
	System	On	The device is booting.
		Blinking	The system is ready for operation.
Console	**Video 1**	On	Stable image signal at video input.
		Off	The incoming video signal could not be detected or it lacks the required quality to be processed by the system.
	K/M	On	A local keyboard was found.
		Blinking	The CPU input (PS/2 or USB) is active and ready. No local keyboard was found.
MC2	**Video 2**	On	Strong video signal at second video input.
		Off	No signal at second video input, or the signal quality is too weak to be processed by the system.
	Trans. 2	On	The communication to the matrix switch is established successfully.
		Off	The communication to the matrix switch could not be established.



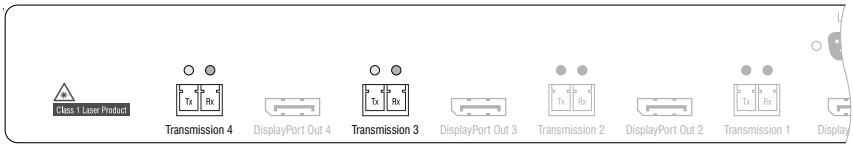
MC3	**Video 3**	On	Strong video signal atthird video input.
		Off	No signal at third video input, or the signal quality is too weak to be processed by the system.
	Trans. 3	On	The communication to the matrix switch is established successfully.
		Off	The communication to the matrix switch could not be established.
MC4	**Video 4**	On	Strong video signal at fourth video input.
		Off	No signal at fourth video input, or the signal quality is too weak to be processed by the system.
	Trans. 4	On	The communication to the matrix switch is established successfully.
		Off	The communication to the matrix switch could not be established.

Back panel



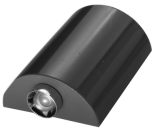
The *Transmission* interfaces at the user module's back panel provide additional status LEDs.

Interface	LED	Status	Meaning
Transmission 1	**Yellow**	Off	No data connection to the counterpart station.
		Flashing	Data connection to the counterpart station established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.
Transmission 2	**Yellow**	Off	No data connection to the counterpart station.
		On	Data connection to the counterpart station established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.



Interface	LED	Status	Meaning
Transmission 3	**Yellow**	Off	No data connection to the counterpart station.
		Flashing	Data connection to the counterpart station established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.
Transmission 4	**Yellow**	Off	No data connection to the counterpart station.
		On	Data connection to the counterpart station established.
	Green	Off	No user is logged in at the user module.
		On	A user is logged in at the user module.

TradeSwitch-LED



The optionally available *TS-LED* (item number A6100041) flashes when keyboard and mouse signals of a master console are switched to the user module.

NOTE: Keyboard and mouse signals can only be switched to another user module or target computer if you purchased the *TradeSwitch function* for the matrix switch.

Technical data

DP-HR-U-CON-FIBER-MC4		
Interfaces to console	Video:	4 × DisplayPort
	Keyboard and mouse signals	2 × PS/2 socket 3 × USB-A
	Audio:	2 × 3.5 mm jack plug
	USB 2.0:	4 × USB-A socket
	Tradeswitch-LED:	1 × D-SUB 9 socket
Data transmission to the matrix switch	Interface:	2 × LC-Duplex socket
	Transmission distance:	‣ DVI-CPU-Fiber-UC(M) Max. 100 Meter (62,5µ/125µ), Max. 200 Meter (50µ/125µ OM2) Max. 400 Meter (50µ/125µ OM3)
		‣ DVI-CPU-Fiber-UC(S) Max. 5.000 Meter (9µ/125µ OS1)
		‣ DVI-CPU-Fiber-UC(S+) Max. 10.000 Meter (9µ/125µ OS1)
Video	Format:	DisplayPort (DP 1.1a)
	Colour depth:	24 bit
	Video bandwidth:	25 to 300 MP / s, DisplayPort 4 Lanes, HBR 2.7 Gbps
	Max. resolution:	▪ 2560 × 1600 (60 Hz) ▪ 4096 × 2160 (30 Hz)
	Examplary resolutions:	▪ 4096 × 2160 (24 or 25 Hz) ▪ 3840 × 2160 (24, 25 or 30 Hz) ▪ 2048 × 2160 (60 Hz) ▪ 2048 × 2048 (60 Hz)
		‣ Further standardised resolutions within the video bandwith possible.
	Vertical frequency:	20 Hz to 120 Hz
	Horizontal frequency:	30 kHz to 135 kHz
Audio	Type:	Bi-directional extension
	Resolution:	24 bits
	Refresh rate:	96 kHz
	Bandwidth:	22 kHz
USB	Specification:	USB 2.0
	Transmission type:	transparent
	Transmission rate:	Max. 16 Mbit/s

DP-HR-U-CON-FIBER-MC4		
Main power supply	Type:	Internal power pack
	Connector:	1 × IEC plug (IEC-320 C14)
	Power input:	100 - 240 VAC; 0.6 A - 0.4 A
Redundant power supply	Type:	External power pack
	Connector:	1 × Mini-DIN 4-Buchse
	Power input:	12 VDC; 3.8A
Housing	Material:	Anodised aluminium
	Dimensions (W × H × D):	435 × 44 × 210 mm
	Weight:	Approx. 2.3 kg
Operational environment	Temperature:	+5 to +45 °C
	Air humidity:	< 80%, non condensing
Conformity		CE, RoHS

C Generic HID

In **Generic HID** mode, data of the USB input device connected to the **Generic** socket of the user module remains *unaltered* when transmitted to the active target module.

The use of *Generic HID* devices is possible only after you enable the *Generic HID* mode of the user module and of the target module.

NOTE: With enabled **Generic HID** mode, it is *not* possible to operate the OSD with a keyboard connected to the **Generic** socket.

In *Generic HID* mode, you can connect USB hubs or USB composite devices to the **Generic** socket of the user module.

USB composite devices are USB devices that are connected to a computer via *one* USB cable, but consist of separate HID devices (e.g. keyboard/mouse or touchpad/mouse.

When connecting a USB hub or a USB composite device containing multiple USB devices, only the first of the connected HID devices can be used in *Generic HID* mode. The OSD informs you if other HID devices of the composite device or the hub are detected.

NOTE: In *Multi User mode*, the *Generic HID* device is available to the first active user module. Once the user module logs off and another user module logs in, the *Generic HID* device of the now active user module becomes available.

Enabling/disabling the user module's Generic HID mode

How to enable/disable the user module's Generic HID mode:

1. Press **Ctrl+Num** (default) to open the on-screen display.
2. Press **F11** to open the *Configuration* menu.
3. Select **Console** and press **Enter**.
4. Select **Generic HID** and press **F8** to select one of the following options:

off:	Connect either a USB keyboard or a USB mouse to the user module's **Generic** interface.
on:	The data of any USB input device connected to the user module's **Generic** interface remains unaltered when transmitted to the active target module.

IMPORTANT: To use the generic HID device, enable the USB HID mode **Generic HID** of the target modules you want to access (see below).

5. Press **F2** to save your changes.

Enabling/disabling the target module's Generic HID mode

USB target modules support different USB input devices. You can use the special features of a USB input device after selecting the specific USB keyboard mode (see page 114).

As an alternative to the specific USB keyboard modes, you can use the **Generic HID** mode. In this mode, data of USB devices connected to the **Generic** interface remains unaltered when transmitted to the active target module.

IMPORTANT: When connecting a USB hub or a USB composite device containing multiple USB devices, only the first of the connected HID devices can be used in **Generic HID** mode (see page 114).

How to select a USB keyboard mode:

1. Press **Ctrl+Num** (default) to open the on-screen display.
2. Press **F11** to open the *Configuration* menu.
3. Select **Target** and press **Enter**.
4. Select the target module whose settings you want to change and press **F5**.
5. Select **USB keyboard** and press **F8** to select one of the following options.

Multimedia:	PC keyboard with additional multimedia keys (*default*)
Standard:	PC keyboard with standard keyboard layout
Generic:	Any USB input device

NOTE: USB target modules additionally support certain USB input devices. After selecting the specific USB keyboard mode of such a device, you can use the special features of these USB input devices.

6. Click **OK** to save your changes.

D Extender mode

The user modules and the target modules for the digital matrix switch can be operated in *extender mode*.

Connect a user module directly with a compatible target module. Use the same cable types as for the connection of a matrix switch (see *Installation*).

NOTE: Older modules may require a crossover cable to connect both modules.

The modules auto-recognise direct connections. The computer connected to the target module is operated at the user module.

Opening the on-screen display in extender mode

In extender mode, you can change the user module settings in the module's OSD.

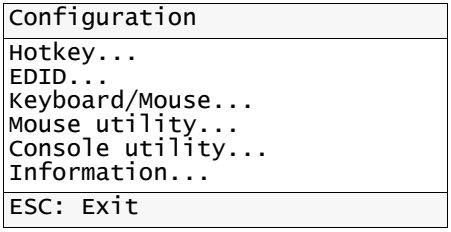
NOTE: When the modules are connected to a matrix switch, the modules are configured in the OSD of the matrix switch.

The matrix switch manual describes the OSD settings.

You can use the configured hotkey to open the on-screen display at the console.

How to open the on-screen display:

1. Press **Alt**+**Num** (default) to open the on-screen display.



Configuration

With the user module's on-screen display, you can view and change the settings in extender mode.

Changing the hotkey to open the on-screen display

When in extender mode, press **Alt+Num** (default) to open the user module's local on-screen display (OSD).

> **NOTE:** The hotkey consists of at least one hotkey modifier key and an additional hotkey, which you can select from multoiple options.

Both the **Alt** hotkey modifier key and the **Num** hotkey can be changed.

How to change the hotkey to open the on-screen display:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Hotkey** and press **Enter**.
3. Use the **arrow keys** to select *at least* one of the hotkey modifiers listed under **Modifier**. Then, press **F8**:

Ctrl:	*Ctrl* key
Alt:	*Alt* key
Alt Gr:	*Alt Gr* key
Win:	*Windows* key
Shift:	*Shift* key

4. Press **F8** to select one of the hotkeys listed under **Key**. The on-screen display can be opened by pressing the hotkey and the selected hotkey modifier(s) at the same time:

Num:	*Num* key
Pause:	*Pause* key
Insert:	*Insert* key
Delete:	*Delete* key
Home:	*Home* key
End:	*End* key
PgUp:	*Page Up* key
PgDn:	*Page Down* key
Space:	*Space* key

5. Press **F2** to save your settings.

Opening the on-screen display via double keypress

In addition to opening the OSD with the key combination **Alt+Num**, you can open the OSD by pressing a previously selected key twice.

How to define the key to open the OSD via double keypress:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Hotkey** and press **Enter**.
3. Select **OSD via 2x keypress** and press **F8** (repeatedly) to select one of the following options:

off:	Opening OSD via double keypress disabled (defaultStandard)
Ctrl:	Open OSD by pressing *Ctrl* twice
Alt:	Open OSD by pressing *Alt* twice
Alt Gr:	Open OSD by pressing *Alt Gr* twice
Win:	Open OSD by pressing *Win* twice
Shift:	Open OSD by pressing *Shift* twice
Print:	Open OSD by pressing *Druck* twice

ADVICE: Press **Ctrl+F8** to show a list inclduing all options. Select the desired option and press **Enter**.

4. Press **F2** to save your settings.

Changing the select keys

NOTE: *Select keys* can only be used and configured at user modules providing at least two channels (e. g. **DVI-CON-2**).

In the default settings, the select keys **1** and **2** are active to switch between the connected target modules.

You can also select another set of select keys.

How to select another set of select keys:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Hotkey** and press **Enter**.

3. Select **Selectkeys** and press **F8** to select one of the following options:

1, 2:	Activates select keys **1** and **2**
F1, F2:	Activates select keys **F1** and **F2**
NUM 1, NUM 2	Activates select keys **NUM 1** and **NUM 2**
A, B:	Activates select keys **A** and **B**

4. Press **F2** to save your settings.

Administrating EDID profiles

The EDID information (*Extended Display Identification Data*) of a monitor gives the graphics card of a connected computer information about various technical features of the device.

The EDID profile of the monitor that is connected to the user module, is not available at the target module. Therefore, the target module transmits a standard profile to the computer. The EDID information of the profile are optimised for the majority of available graphics cards.

ADVICE: In some cases it is recommended to send the EDID profile of the console monitor to the target module. Now the connected computer receives the EDID data of the console monitor.

How to transmit the EDID profile of the connected monitor to the target module:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **EDID** and press **Enter**.
3. Select **Send monitor's EDID** and press **Enter**.
4. Press **Esc** to close the EDID menu.

How to activate the G&D EDID profile:

NOTE: By activating this profile, you might delete a transmitted EDID profile.

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **EDID** and press **Enter**.
3. Select **Install default EDID** and press **Enter**.
4. Press **Esc** to close the EDID menu.

Activating the support of special PS/2 keyboards

The user module supports the additional keys of the follwoing PS/2 keyboards: *PixelPower Rapid Action*, *PixelPower Clarity (blue)* and *SKIDATA1.*

How to activate the support of special PS/2 keyboards:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select **PS/2 Enh. keyboard** and press **F8** to select one of the following options:

no:	Standard keyboard
PixelPower RA:	Special *PixelPower Clarity (blue)* keyboard
PixelPower C:	Special *PixelPower Rapid Action* keyboard
SKIDATA1:	Special *SKIDATA1* keyboard

ADVICE: Press **Ctrl+F8** to show a list inclduing all options. Select the desired option and press **Enter**.

4. Press **F2** to save your settings.

Adjusting the scancode set of a PS/2 keyboard

If a key is pressed on the PS/2 keyboard, the keyboard processor sends a data packet that is called scan code. The two common scan code sets (sets 2 and 3) contain different scan codes.

The user module interprets all inputs of the PS/2 keyboard with scan code set 2.

If the pipe ("|") cannot be entered or if the arrow keys of the keyboard do not work as expected, it is recommended to switch to scan code set 3.

How to select the scancode set of the PS/2 keyboard:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select **PS/2 Scancode set** and press **F8** to select scancode sets **2** or **3**.
4. Press **F2** to save your settings.
5. Restart the user module to apply your changes.

Reinitialising USB input devices

After connecting a USB keyboard or mouse to the user module, the input devices are initialised and can be used immediately.

Some USB input devices require a reinitialisation of the USB connection. Enable the automatic reinitialisation of USB devices if a USB keyboard or mouse does not respond to your inputs during operation.

How to enable/disable the reinitialisation of USB devices:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select the **USB Auto Refresh** entry and press **F8** to select the keyboard type:

off:	The connected USB input devices do not need to be reinitialised (recommended setting).
all:	All USB devices are regularly reinitialised.
only faulty:	The status of USB devices is monitored. If the communication with a USB devices is interrupted, the device is reinitialised.

4. Press **F2** to save your settings.

Opening the on-screen display by mouse

In the default settings of the matrix system, the on-screen display (OSD) can only be called with the configured key combination.

If a Microsoft »IntelliMouse Explorer« or another compatible mouse with five keys is connected to the user console, you can call the on-screen display through the mouse keys four and five at the side of the mouse

How to (de)activate the mouse support to operate the on-screen display:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select **OSD by mouse** and press **F8** to select one of the following options:

No:	OSD cannot be opened by mouse
Yes:	opens OSD via mouse keys 4 and 5 of a compatible mouse

4. Press **F2** to save your settings.

Choosing the USB keyboard mode

NOTE: This setting can only be edited with USB versions of the target modules.

USB target modules support different USB input devices. You can use the special features of a USB input device after selecting the specific USB keyboard mode.

▪ **USB keyboards:** In addition to the keys of standard keyboard layouts, the default USB keymode **PC Multimedia** supports several multimedia keys like **Loud** and **Quiet**.

With *Apple* or *Sun Keyboards*, you can apply special keymodes to use the special keys of these keyboards.

The following table lists the supported USB keyboards:

INPUT DEVICE	SETTING
PC keyboard with additional multimedia keys	› PC Multimedia
PC keyboard with standard keyboard layout	› PC Standard
Apple Keyboard with numeric keypad (A1243)	› Apple A1243
Sun Keyboard (German keyboard layout)	› SUN German
Sun Keyboard (American keyboard layout)	› SUN US

▪ **Displays and tablets:** You can operate computers connected to the target module with one of the supported *displays* or *tablets*:

INPUT DEVICE	SETTING
HP 2310tk	› HP 2310t
iiyama T1931	› iiyama T1931
Wacom Cintiq 21UX	› Wacom Cint.21
Wacom Intuos3	› Wacom Int.3
Wacom Intuos4 S	› Wacom Int.4S
Wacom Intuos4 M	› Wacom Int.4M
Wacom Intuos4 L	› Wacom Int.4L
Wacom Intuos4 XL	› Wacom Int.4XL
Wacom Intuos5	› Wacom Int.5

▪ **Controller:** With **ShuttlePRO v2** multimedia controllers, you can operate audio and video programs. You can use a special USB keymode to operate computers connected to the target module using the controller:

INPUT DEVICE	SETTING
Contour ShuttlePRO v2	› Contour SP2

▪ **LK463 compatible keyboard:** You can connect an LK463 compatible keyboard to the user modules of the KVM matrix system. The order of the 108 keys of these keyboards is the same as the OpenVMS keyboard layout.

A special USB keyboard mode guarantees that the keypress of a special key on this keyboard is forwarded to the target computer:

INPUT DEVICE	SETTING
LK463 compatible keyboard	‣ LK463

How to select a USB keyboard mode:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select **USB HID mode** and press **F8** to select one of the following options.

   ADVICE: Press **Ctrl+F8** to show a list including all options. Select the desired option and press **Enter**.

4. Press **F2** to save your settings.

How to use the special function of Sun keyboards on a standard keyboard:

IMPORTANT: You can use the emulation of »Solaris Shortcut Keys« in the **SUN DE** and **SUN US** keyboard mode only.

If the target module is provided with a *Sun Keyboard*, you can use *Solaris Shortcut Keys* after enabling their support.

When using a standard keyboard, you can perform these functions by using the key combinations listed below:

KEY COMBINATIONS	»SOLARIS SHORTCUT KEY« OF SUN KEYBOARDS
Ctrl+Alt+F2	Again
Ctrl+Alt+F3	Props
Ctrl+Alt+F4	Undo
Ctrl+Alt+F5	Front
Ctrl+Alt+F6	Copy
Ctrl+Alt+F7	Open
Ctrl+Alt+F8	Paste
Ctrl+Alt+F9	Find
Ctrl+Alt+F10	Cut
Ctrl+Alt+F11	Help
Ctrl+Alt+F12	Mute
Ctrl+Alt+NUM+	Loud
Ctrl+Alt+NUM-	Quiet
Ctrl+Alt+NUM*	Compose
Ctrl+Alt+Pause	Shutdown
Pause+A	Stop

Support for servers of IBM's RS/6000 series

NOTE: This setting can only be edited with PS/2 versions of the target modules.

Activate the support for UNIX servers of IBM's RS/6000 series in the *IBM RS/6000 support* menu if the target computer is a server of this series.

How to (de)activate the special support for servers of IBM's RS/6000 series:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select **IBM RS/6000 support** and press **F8** to select one of the following options:

Yes:	Support for servers of IBM's RS/6000 series is activated
No:	Support for servers of IBM's RS/6000 series is deactivated

4. Press **F2** to save your settings.

Enable/disable the startup without a keyboard

By default, user modules start without a keyboard. As an alternative, the user module can interrupt startup by showing a message regarding the missing keyboard. Once you connect a keyboard to the user module, the startup process continues.

How to enable/disable the startup of a user module without a keyboard:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Keyboard/Mouse** and press **Enter**.
3. Select the **Keyboard required** entry and press **F8** to select one of the following options:

no:	User module can be started without a keyboard (default).
yes:	User module can be started only when a keyboard is connected.

4. Press **F2** to save your settings.

Activating or resetting a PS/2 mouse

Compared to USB mouses, PS/2 mouses do not support hot plug technology. You can therefore insert the PS/2 plug during operation, but it may be possible that the computer does not detect the input device.

In order to activate or reset the PS/2 mouse, the matrix system can be used to send a special command to the computer connected to the target module.

NOTE: Since the commands differ depending on the used mouse type and the installed operating system, four different functions are provided.

How to start and use the *Mouse utility* function:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Mouse utility** and press **Enter**.
3. Select one of the following functions and press **Enter**:

Reset Mouse:	Resets the PS/2 mouse interface of a Windows computer
Enable mouse (for Unix):	Activates the PS/2 mouse of a Linux computer
Enable Intelli:	Activates the PS/2 wheel mouse of a Linux computer
Enable Intelli-Explorer:	Activates the PS/2 wheel mouse with additional keys of a Linux computer

Resetting the default settings

This setting resets the default settings of the extender mode. All settings that have been changed by the user are reset.

How to reset the default settings of the matrix switch:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Console utility** and press **Enter**.
3. Select **Set system defaults** and press **Enter**.

Showing status information

The OSD shows you information about the user module and the connected target module.

Several menus provide you with the following information:

FIRMWARE INFO This menu shows information about the user module (console) and the target module (target).	
ID:	Device ID
Version:	Installed firmware version
Device:	Type name
Firmware:	Name of installed firmware

HOTKEY	
Local Hotkey (Modifier+Key)	
Modifier:	Modifier key of key combination
Key:	Hotkey of key combination
Local OSD via 2x keypress	
Modifier:	Configured key to oprn the on-screen display via double keypress
Local selectkeys	
Keys:	Selected set of select keys:

HARDWARE INFORMATION	
Serial number:	Serial number of user module

How to show status information in the OSD:

1. Press the **Alt+Num** (default) hotkey to open the on-screen display.
2. Select **Information** and press **Enter**.
3. Use the **arrow keys** to select the desired menu item (see above).
4. Press **Enter** to show the desired information.
5. Press **Esc** to leave the menu.

NOTES

NOTES

The manual is constantly updated and available on our website.

http://gdsys.de/A9200141

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